The Sight-Saving Review

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A.M.A. Resolution on Dissemination of Information Designed to Prevent Blindness

"WHEREAS, It is not contrary to the Principles of Medical Ethics as determined by the American Medical Association for members of the Association to disseminate information pertaining to matters of public health, such as cancer, diabetes and venereal disease, by lectures, demonstrations, radio talks, pamphlets and conferences or other means to nonmedical groups; and

"WHEREAS, Ophthalmic subjects, such as vascular disease, glaucoma, retinal disorders and optic nerve disease, considered as potential causes of blindness are matters of grave importance to the public; and

"WHEREAS, The prevention of blindness is one of the chief obligations of ophthalmologists; therefore be it

"*Resolved*, That the Section on Ophthalmology of the American Medical Association declares that it is entirely within the definition of medical ethics for its members to engage in lectures, demonstrations, the preparation of pamphlets and other measures suitable for the dissemination of information designed to prevent blindness, and directed to any nonmedical group."

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Hemispheric Control of Eye Infections*

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THE Pan American Sanitary Bureau, Regional Office of the World Health Organization, is particularly concerned with the study of onchocerciasis (infection with the filarial worm, *onchocerca volvulus*). In the Western Hemisphere, this disease presents a definite relationship to the production of blindness, and constitutes an important public health problem in certain limited areas. Besides its long-recognized invasion of Guatemala and Mexico, it has recently been found to exist in Venezuela, and it may well exist unreported also in regions of the South American continent.

Incidence of Onchocerciasis

The Pan American Sanitary Bureau has sponsored studies on the control of onchocerciasis through chemotherapy and through measures directed against the insect vectors in Guatemala and Mexico. A special round-table discussion of the problems connected with this disease was held in Mexico City under the auspices of the Bureau in February, 1949, with specialists from Guatemala, Mexico, Venezuela and the United States present.

Pablo Anduze found no cases of blindness from onchocerciasis in Venezuela up to May 6, 1949, although live microfilariae were seen in two patients' eyes. Basing his conclusions upon a study of over 800 persons in the onchocerciasis-infected area of Venezuela, 300 of whom were onchocerca-infested, he believes that the Venezuelan form of the disease is very mild.

During the summer of 1950, Dr. Bertha Riveroll Noble, who has had considerable experience with the ophthalmic lesions in victims of onchocerciasis in Guatemala and Mexico, was sent to Venezuela by the Bureau to survey the importance of onchocerciasis there in the production of blindness. Dr. Noble's study is being carried out in cooperation with the national health authorities in Venezuela.

With its present limited distribution but tendency to expand in Mexico, it is very important that an international attempt be made to ascertain the full distribution of onchocerciasis in the Americas and that as soon as a standard technique has been evolved, an international program be undertaken to eradicate completely onchocerciasis from the Western Hemisphere.

At various times certain countries have published statistics of the num-

* Extract from paper presented at the Joint Conference of the Pan American Association of Ophthalmology, and the National Society for the Prevention of Blindness, in Miami, Florida, 1950.

ber of blind according to the results of the 1940 and previous censuses. In this group are Argentina, Bolivia, Brazil, Canada, Cuba, Guatemala, Honduras, Mexico, Panama, Peru, the United States, Uruguay and Venezuela. No census of the blind has been made by Chile, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Nicaragua or Paraguay. The figures available in Bolivia were taken from the 1900 census, and obviously conditions have changed in that country during the last half century.

Incidence of Blindness

From recent census figures, it is seen that the number of blind persons per hundred thousand population were as follows: Brazil, 146.7 (1940 census); Peru, 144.5 (1940); Venezuela, 123.5 (1940); Mexico, 114.1 (1935); and Honduras, 108.1 (1935).

Countries having under one hundred blind persons per hundred thousand population were, according to a 1940 census: Cuba, 96.9; Canada, 86.6; Uruguay, 80.7; Guatemala, 71.7; and Panama, 64.7.

The United States, according to its 1930 census, had 51.8 blind persons per hundred thousand. However, Dr. R. G. Hurlin estimated the number of blind persons in the United States in 1947 to be 175 per hundred thousand.

The accompanying statistics concern the incidence and the causes of blindness, as well as the incidence of certain communicable diseases which are possible causes of blindness. These statistics are taken from official publications and medical journals, but are subject to serious defects and are obviously insufficient for the purpose of obtaining a complete picture of the situation as regards blindness.

Limitations of Data

Among the limitations of available data, I would like to mention the unreliability of census data, of subjective information and of methods of case reporting in individual countries.

Census data on the number of the blind are quite unreliable, due to the difficulties of defining and determining blindness, especially under the circumstances of census enumeration. That there is lack of standardization in the definition of blindness is clearly revealed by the wide discrepancies in the census figures. This fact has already been recognized in some countries and has resulted in the omission of the item from the most recent censuses (Colombia, Panama, the United States). In other countries, where the information was collected, it has not been published (Costa Rica, Dominican Republic, El Salvador, Honduras, Nicaragua).

Subjective Information

Subjective information on the causes of blindness, such as gathered from the blind persons themselves during a population census, is not considered reliable. Therefore it is difficult to obtain data on the causes of blindness for a group sufficiently large to be considered representative of the total number of blind in any country. The problem is rendered more acute by the difficulty of determining the principal causes of blindness in many cases. The tendency to confuse the original cause and the site of the pathological manifestation in classifying eye diseases is well known.

Method of Case Reporting

The data on the incidence of communicable diseases are dependent upon

the method and the completeness of case reporting in each country. The reported cases, therefore, cannot be interpreted as an accurate account of the true incidence of the disease, and should not be utilized as a basis for international comparisons. In the case of gonorrhea the availability of public health dispensaries and clinics for treatment affects the comparative value of the reported figures, as these are the sources of gonorrhea reporting, the private physician playing a secondary role. The gonorrhea figures, therefore, represent the extent of reporting and public treatment facilities rather than incidence.

Causes of Blindness

Argentina

A résumé of the literature consulted regarding the causes of blindness shows that in Argentina gonorrheal conjunctivitis was given as the cause of blindness in 33 per cent of the persons attended by the National Institute of the Blind. According to Da Silva, the principal causes of blindness in Brazil are trachoma, ophthalmia neonatorum, syphilis and glaucoma.

Chile

According to studies made at the medical services of the Workers' Obligatory Insurance Fund, the School for the Blind, and the Ophthalmological Clinic of Valparaiso, Chile, and from other ophthalmological studies, the principal causes of blindness in Chile are found to be glaucoma, conjunctivitis of the newborn, and atrophy of the papilla.

Colombia

Statistics on the causes of blindness, made by the School for the Blind and Deaf-mutes of Medellin, show the following causes in Colombia: purulent ophthalmia, 42 per cent; cataracts, various types, 22 per cent; atrophy of the optic nerve, 14 per cent; adherent leucomas, 6 per cent; buphthalmias, 6 per cent; traumatic accidents, 6 per cent; pathological luxations of the lens, 4 per cent. Bernardo G. Duque estimated that the causes of blindness for the entire population of Colombia, including larger proportions at older ages than the statistics given above, would be as follows: purulent ophthalmia of the newborn, 40 per cent; glaucoma, 20 per cent; optical atrophies, 10 per cent; pathological cataracts, 10 per cent; gonococcic conjunctivitis (adult age), 5 per cent; accidents and rare conditions, 15 per cent.

Costa Rica

Causes of blindness in Costa Rica are, according to a study of 90 cases observed at the San Juan de Dios Hospital: glaucoma, 34 per cent (of which 2 cases with positive Wassermann, both cases of secondary glaucoma); atrophy of the optic nerve, 29 per cent (of which 70 per cent with positive Wassermann); glaucomas, total, simple or complicated, with lesions of the iris, 17 per cent (called in another article "leucomas of the cornea"; the usual cause is purulent ophthalmia of the newborn or of adults).

Haiti

P. Fouron, in answer to the questionnaire of the II Pan American Congress of Ophthalmology, stated that the statistics of private clinics show the principal causes of blindness in Haiti to be conjunctivitis of the newborn, syphilis and alcoholism, in order of importance.

Honduras

Jose Gomez Marquez, in answer to the questionnaire, observed that the great majority of cases of blindness in Honduras are produced by lesions of the interior of the eye. There is no trachoma, and gonococcic conjunctivitis is of such a benign character that it does not produce serious corneal lesions. In an article published in 1942, Gomez Marquez gives lists of eye conditions rarely observed in Honduras and of those of wide distribution, and mentions the low incidence of certain common causes of blindness in other countries of the world and the slow incubation, minimum intensity and extreme curability of gonococcic conjunctivitis.

Mexico and Guatemala

In answer to the questionnaire of the II Pan American Congress of Ophthalmology, Daniel Silva stated that the most common causes of blindness in Mexico and Guatemala are purulent ophthalmia of the newborn, the eruptive fevers, and syphilis. Puig Solanes and Riveroll Noble found the eyes to be affected in 66.30 per cent of a sample of 1,334 cases of onchocerciasis, which they considered representative of the cases in the infected regions of Guatemala and southern Mexico. If the total number of cases, including treated and nontreated, in Mexico is 35,000, the total of persons with varying degrees of reduced vision from onchocerciasis in Mexico would be 23,205, or a rate of 102 per 100,000 inhabitants for the entire country. F. Ruiz Reyes conducted a census of onchocerciasis in the State of Chiapas, Mexico, in 1943, finding 3.4 per cent of the population infested. Similar calculations for the estimated 25,000 onchocerca-infested persons in Guatemala give a rate of 471 persons with ocular involvements of onchocerciasis per 100,000 inhabitants, (rate for all forms of onchocerciasis, 711).

Peru

Julio Raffo Campodonico reported that although there are no statistics as to the causes of blindness in Peru, the most frequent causes are believed to be purulent conjunctivitis, smallpox and glaucoma.

In conclusion, these notes offer nothing essentially new, but represent a résumé of the data on blindness in the Western Hemisphere, with a summary of the legislation and the literature available. It is possible to see at a glance how scarce the material is for any serious consideration of the hemispheric control of eye infections.

It is hoped that critical consideration of this material will result in something which the Pan American Association of Ophthalmology can give to the countries of the Western Hemisphere, and which may serve as a basis for the Pan American Sanitary Bureau to broaden its assistance in this particular field to the countries of the New World.

Centennial of the Invention of the Ophthalmoscope

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WHEN Helmholtz invented his instrument for viewing the interior of the eye he marked the beginning of a new epoch in ophthalmology. On this centennial of his invention, we do well to pause and honor him.

THE ophthalmoscope has influenced and stimulated the growth of ophthalmology as a specialty more than any other single factor. Its invention permitted for the first time examination of the interior of the living eye. Furthermore, it suggested means by which other parts of the body could be examined and gave impetus to the later invention of the otoscope, laryngoscope, gastroscope, bronchoscope and cystoscope.

Early Theories

Until a hundred years ago it was thought that the interior of the eye was dark and the pupil of the eye black because all of the light which entered the eye was absorbed by its dark lining. There had, however, been a few perplexing observations. Pliny, some time before 79 A.D., recorded what must have been common knowledge, that the eyes of certain animals, cats for instance, were brilliant at night.

During the eighteenth and early nineteenth centuries several hypotheses were proposed to account for this phenomenon: (1) that the light of the sun was absorbed during the day and emitted at night; (2) that the retina was phosphorescent; or (3) that it created electricity. Prévost, in 1810, took a cat into a completely dark room and showed that no light was emitted from its eyes even when the cat was petted or frightened or angered. He concluded that light did not emanate as an effect of volition or of certain passions, but rather that the luminosity was a reflection of incident light. Later, others showed that the reflecting membrane was a layer in the choroid, the tapetum lucidum, present in many animals but not in man. Cumming, in London in 1846, and Bruecke, in Vienna in 1847, independently described how the pupil of man could be made luminous, but they did not see the fundus of the eye.

The interior of a living eye was first seen by Jean Méry in 1704 by accident

when he was studying the pupillary reactions of a cat held under water. Under suspended respiration the pupil became dilated and fixed, even in strong sunlight. He reported seeing the end of the optic nerve and the choroid and its vessels.

Charles Babbage, an English mathematician, in 1847 devised a mirror for looking into the eye, but since he failed to announce his discovery and apparently also failed to appreciate its importance, he fails also to receive recognition for it.

Hermann von Helmholtz

Full credit for the invention of an instrument for examining the interior of the eye belongs to Hermann von Helmholtz, who at the time was a young professor of physiology at Koenigsberg, Germany. He announced his invention in a communication to the Berlin Physical Society on December 6, 1850. The following year he published a monograph in which he described his new instrument and gave a complete explanation of its underlying principles.

First Ophthalmoscope

A letter has been preserved which he wrote to his father on December 17, 1850, in which he said:

". . . I have made a discovery during my lectures on the Physiology of the Sense-organs, which may be of the utmost importance in ophthalmology. It was so obvious, requiring, moreover, no knowledge beyond the optics I learned at the Gymnasium, that it seems almost ludicrous that I and others should have been so slow as not to see it. It is, namely, a combination of glasses, by means of which it is possible to illuminate the dark background of the eye, through the pupil, without employing any dazzling light, and to obtain a view of all the elements of the retina at once, more exactly than one can see the external parts of the eyes without magnification, because the transparent media of the eye act like a lens with a magnifying power of twenty. The blood-vessels are displayed in the neatest way, with the branching arteries and veins, the entrance of the optic nerve into the eye, etc. Till now a whole series of most important eye diseases, known collectively as black cataract, have been *terra incognita*, because the changes in the eye were practically unknown, both during life, and, generally speaking, after death. My discovery makes the minute investigation of the inter-

Hermann von Helmholtz, 1848

Illustrations, from *Documents Regarding Invention of the Ophthalmoscope by Hermann von Helmholtz in the Year 1950*, by Prof. Dr. E. Engelking. Published by J. F. Bergmann Co., Munich, 1950.

nal structures of the eye a possibility. I have announced this very precious egg of Columbus to the Physical Society at Berlin, as my property, and am now having an improved and more convenient instrument constructed to replace my pasteboard affair. I shall examine as many patients as possible with the chief oculist here, and then publish the matter."

Helmholtz' instrument was difficult to use, and he himself has stated that, after he made his first model out of four glass slides and some cardboard, it was eight days before he was able to see the background of the eye with it. He persisted only because he was convinced that his theory was correct and that it must succeed; and he had the great joy of being the first to see a living retina.

Variety of Instruments

Improvements and modifications were made by others almost immediately. A book published in 1863 described forty-three varieties of ophthalmoscopes which had already been made up to that time, and if such a book were to be published now it would have to list about 200 varieties. The greatest improvements have been dependent on new types of illumination, and a decided advance was made when the small electric light bulb became available.

Adoption of the Ophthalmoscope

Soon after the invention of this new instrument its possibilities became apparent to the ophthalmologists who took the trouble to master it, and they were quick to apply it in their practice. It revealed to them conditions in the fundus of the eye which previously they had not even suspected, and it disclosed retinal pictures which were diagnostic not only of diseases of the eye but of many generalized disorders as well. Within the first decade the following conditions, among others, were discovered and described: retinitis pigmentosa, detachment of the retina, thrombosis of the central retinal vein, embolism of the central retinal artery, retinitis of hypertension, cupping of the optic disk in glaucoma, optic atrophy, and the choked disk of brain tumor.

Detection of General Diseases

In England, Jonathan Hutchinson put the ophthalmoscope to use in his early studies on the effect of syphilis on the eye. Hughlings Jackson, the leading neurologist in London during his day, did much to establish the value of ophthalmoscopy in the diagnosis of brain disease. Another neurologist practicing in the same city, W. R. Gowers, used the ophthalmoscope in his daily work, and published a text in 1879, *Medical Ophthalmoscopy*. Pre-

Examples of Helmholtz' ophthalmoscope

viously, in 1871, Clifford Allbutt of Leeds had published his text, *On the Use of the Ophthalmoscope in Diseases of the Nervous System and of the Kidneys; also in Certain Other General Disorders.*

Even earlier, atlases had been published which depicted the appearance of the fundus of the eye in various diseases. The paintings in most instances were made by the ophthalmologists themselves, and in some of the atlases, notably those of Jaeger and Liebreich, were skillfully reproduced.

Present Uses of Ophthalmoscope

At the present time the ophthalmoscope holds a high place in several fields of medicine. In the practice of ophthalmology, needless to say, almost every patient is examined with it, for the interior of the eye is subject to many disorders. In neurology so many diseases present manifestations in the eyes that ophthalmoscopic examination has become an accepted part of a complete examination of the nervous system. In general medicine numerous diseases cause changes in the eyes. At present among the most frequent are diabetes and high blood pressure, both of which produce characteristic pictures in the retina which are visible with the ophthalmoscope. Of increasing importance during future years with our greater population of old people will be the study of senile macular degenerations. These have a high place among the causes of visual loss in the aged, and will come more and more to the attention of those in charge of caring for the visually handicapped old people.

When Helmholtz invented his instrument for viewing the interior of the eye he marked the beginning of a new epoch in ophthalmology. On this centennial of his invention we do well to pause and honor him.

1951 PREVENTION OF BLINDNESS CONFERENCE.—The National Society for the Prevention of Blindness will hold its next conference March 28, 29 and 30, 1951, at the Hotel New Yorker, Eighth Avenue and 34th Street, New York, N. Y. Hotel reservations should be made directly with the Hotel New Yorker.

Ophthalmic Effects of Welding Radiations*

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EXPLAINS nature of welding operations, the eye hazards involved, and the safety practices necessary to avoid eye damage.

BECAUSE of its numerous advantages, welding will play an important rôle in many industries in the future. It therefore behooves us to incorporate into the training of industrial physicians as much knowledge as we possess of the occupational hazards involved. There are various health hazards in welding in addition to those resulting in eye injuries—electric shock, inhalation of fumes from lead, cadmium, zinc, chromium and fluorine, explosions from welding in tanks or on pipes containing inflammable gases, etc. However, eye injuries are far more numerous than any other type.

Incidence of Flash Injuries

Available statistics on the incidence of welding flash are not accurate, for, unfortunately, many shipyard dispensaries have treated and recorded as welding flashes some cases in which the worker was only momentarily exposed to a welding arc and was afraid that he would develop actinic ophthalmia. As I will explain later, the term "welding flash" is a misnomer, for a specific amount of exposure is required to develop this syndrome. However, the term is well known in industry and is widely used today, regardless of its inaccuracy.

At the onset of the tremendous increase in shipbuilding in 1942 at least 40 per cent of all new injuries in shipyards were eye injuries, and a very large part of these were caused by exposure to the ultraviolet radiations from welding. Despite the fact that the usual case of flash involves no lost time nor permanent disability, there were in 1943 about 3,000 lost-time cases due to welding flash; and in 1944 there were 1,300. According to the Bureau of Labor Standards of the U. S. Department of Labor, a lost-time case is one in which the employee either is unable to work at his next regular shift following injury or is permanently disabled. Records covering all injuries indicate that for each lost-time case there were 50 non-lost-time cases that required medical treatment. Since so few flash cases involve

* Presented at the Graduate Course on Occupational Aspects of Ophthalmology of the New York University College of Medicine, New York, N. Y.

lost time, I believe that this ratio is much higher for welding flashes—at least 100 to 1. This indicates that in shipyards alone we had, as late as 1944, when eye protection programs were well established, over 100,000 cases of welding flash.

Welding Process

It is essential for the industrial physician to understand the fundamentals involved in any industrial process if he is intelligently to treat patients exposed to its hazards. In general all modern welding processes are designed for rapid production of intense heat within a small area. In electric arc welding the intense heat generated by the passage of electric current across the arc melts both the welding rod and the edges of the plates to be welded, thereby filling the gap with a fused layer of metal derived from both the welding electrode and the plates.[15] Coated electrodes have gradually displaced the uncoated as it is possible with the coated rods to make consistently better and stronger welds at much higher speeds. The so-called shielded arc is produced by these special coatings baked on the welding electrodes. Some of this coating burns to form a protecting gas shield around the molten metal as the metal passes across the arc, while the mineral portion of the coating forms a protective slag on top of the molten metal. Thus there is less oxidation of metal, less formation of nitrides; the metal cools at the proper rate, and the work is done faster than with bare electrodes.

There are various types of welding, each using specific materials and designed for a particular purpose. Electric arc welding is by far the most common; gas welding is second in importance.[10] The great bulk of shipyard electric arc welding on black iron and mild steel is done over a range of 25 to 50 volts and 100 to 300 amperes. The higher voltages and amperages are used with large electrodes or where deep penetration of the base metal is desired, while the lower voltages and amperages are used for small electrodes and mild penetration of the base metal.

Radiation from Electric Arc Welding

The biologic response to radiation emitted by the welding arc follows the laws of light in that the intensity of the eye reaction varies directly with the length of exposure and inversely with the square of the distance.[13] Within a 24-hour period the effects of repeated exposures are cumulative.

Ultraviolet Radiation

The limits of the band of welding radiations and of the cut-off for various tissues of the eye vary somewhat in the literature on this subject, for considerable work has been done on it. However, the differences are insignificant. The cut-off wave lengths in the ultraviolet region of the crystalline lens occur at 336 mu (milli-microns); of the cornea, at 300 mu; and of the vitreous humor, at 230 mu. That is, these are the shortest wave lengths that the tissues will transmit.

The toxic ultraviolet rays are those below 300 mu, and unfortunately the welding arc is rich in the short as well as the long ultraviolet rays.

Sufficient exposure to short ultraviolet rays produces the following picture of welding flash[5]: the pathologic

changes are confined to the superficial structures of the eye. Slit lamp reveals some superficial devitalization and minute edematous blebs on and in the epithelium of the cornea which is quickly repaired in 12 to 18 hours after onset of symptoms. The cornea, iris and lens absorb the ultraviolet rays and prevent further penetration, thereby protecting the deeper structures of the eye. We have found no evidence that this temporary injury to the corneal epithelium either permits ready bacterial invasion or contributes to permanent injury of the cornea even though frequently repeated. There is deep-seated pain in the eyes which leads to blurring. Accommodation is temporarily affected and the attempt to accommodate may lead to eye pain and headache. In some cases apparently the abnormal sensitivity to ultraviolet radiation may persist indefinitely.

Kinsey, Cogan and Drinker[4, 7] measured the amount of ultraviolet necessary to produce a welding flash, or actinic ophthalmia, as it is more correctly called. They found that 150 footcandle minutes was the threshold and that 200 footcandle minutes of exposure consistently produced a flash. To illustrate—if a worker watches an arc for 1.5 minutes from such a distance that the intensity of the arc exceeds 100 footcandles then there is danger of getting a flash. The intensity and wave-length distribution of the ultraviolet radiation from the welding arc varies with many factors, such as voltage, amperage, size of rod, length of arc, composition of base metal, composition of welding rod and composition of welding rod coating. With all these variables, it is not possible to set absolute standards of length of exposure and distance from the welding arc that are necessary to prevent eye injury. However, with most black-iron welding in shipyards, we have found that the threshold for nearby workers is about 20 seconds at 7 feet, and for more distant workers, 17 minutes at 50 feet. In view of these facts it is obvious that the term welding flash is a misnomer.

There is a type of injury to the eye caused by exposure to high-powered radiation of no specific wave length, as the light of a short circuit of an electric system, or an explosion. The major source of such energy is in the infrared. Since the exposure is momentary this may truly be called a flash. The onset of symptoms is immediate, with temporary blindness, severe pain and redness increasing in severity for a few hours and then subsiding.

Infrared Radiation

The welding arc emits some short infrared rays, and relatively less of the long rays. Infrared must be present in large quantities to affect the lens, as in glass blower's cataract, and so far has presented no ophthalmological problems in shipyards. Cataracts do develop slowly and it is possible that in the years to come we may be faced with the problem of late ocular effects of infrared radiation.

Treatment of Flash

The treatment of arc-welding flash is simple and symptomatic:

1. Examine the eyes to rule out presence of a foreign body, as the patient may have both a flash and a foreign body. Since the vast majority of welding flashes are bilateral the presence of a foreign body must be

ruled out before making the diagnosis of a unilateral flash.

2. Instill a few drops of a local anesthetic agent such as holocaine, butyn, pontocaine, metycaine, etc.

3. Follow with a few drops of adrenaline and cold compresses.

4. Advise dark glasses if the case is severe.

Some physicians have advocated the use of the infrared lamp in treating welding flash. It has been tried in some shipyard dispensaries but without much success. In the absence of experimental proof of its value we do not recommend the use of infrared for treating welding flash in shipyards.

Protection Against Radiation from Arc Welding

The primary purpose of the dark glass in welding helmets is to decrease the volume of light to within the range of the retina to get depth perception and to be able to follow the flow of metal from the welding rod. It is most essential that the puddling of metal be always under control. Too much deposit requires grinding and too little makes a weak joint.

In the American Standard Safety Code[11, 14] are given the densities for visible radiation and per cent of transmission for total visible, maximum total infrared and maximum ultraviolet at 4 wave lengths: 313, 334, 365 and 405 mu. There is also a description of the type of welding for which each shade is designed. It will be noted that the amounts of ultraviolet and infrared transmitted are very small. We know from sad experience that the welder rarely gets a flash from his own arc, but rather from a nearby arc when he flips up his hood to inspect or clean his work. Ultraviolet rays reflected from bulkheads, walls, screens, etc., undoubtedly contribute to the accumulation of sufficient exposure to result in a flash.

Workers such as welders' helpers, shipfitters, and pipefitters in the vicinity of welding arcs should also have eye protection. Obviously a shade 1.5, 2.0 or 2.5 will filter out more ultraviolet, visible and infrared rays than will a clear safety lens. However, visual acuity is greater with clear lenses, thereby reducing accidents from tripping and stumbling, particularly at night. Although many recommend tinted lenses, we believe that clear lenses will filter out enough of the ultraviolet to protect the worker who is only occasionally exposed to the welding arc. It is also easier to get shipyard workers to wear clear lenses. In our yards, therefore, we recommend that all workers occasionally exposed to welding arcs wear clear safety lenses, a practice which has the added advantage of protecting the eyes from flying particles. Of course, if a worker prefers, he may wear a darker shade of lens.

For some time now we have been advocating the wearing of clear safety lenses under a welder's hood. They protect the eyes both from nearby arcs and flying particles and yet do not interfere with visual perception through the dark welding glass. Prescription lenses, of course, have their place in welding.

Eye protection is afforded nearby workers through isolation of the welder in a screened booth or behind a portable screen. The portable screen affords adequate protection but it is difficult to get the welder to carry it with him on board ship.

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The Rôle of the Eye Specialist in Cases of Reading Difficulties*

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Hanover, N. H.

EMPHASIZES the need for considering the educational and psychological, as well as the visual aspects in relation to all patients having reading disabilities.

THE eye specialist frequently is consulted, sometimes initially and at other times on a referral basis, by patients whose chief complaint is that of difficulty in reading. Most frequently such patients are children whose parents or teachers are concerned about their reading abilities. In many instances, such cases are treated unsympathetically and are informed bluntly that there is little or nothing wrong with their eyes. Without further advice by the eye specialist such as referral to a remedial reading center or to a psychiatrist, many individuals assume that nothing can be done and that their disability is due to an incurable lack of intelligence. On the other hand, there are occasions when cases of reading disability are treated extensively and needlessly by the eye specialist. Sometimes glasses are prescribed more or less as a placebo, or exercises and even operations are advised, when the essential cause of the disability is not even ocular. However, there are a significant number of reading disability cases in which the underlying cause *is* of ocular nature and which are helped by appropriate ocular treatment.

A Product of Mind and Eye

Reading is such a complex achievement that it is unreasonable to expect a single individual, no matter how expert he is in his own field, to investigate, analyze, diagnose and prescribe for all cases of difficulties in reading. Ideally, a group of experts should be consulted. This group should consist of an educational psychologist, a remedial reading teacher, a psychiatrist, an internist, and an eye specialist. Besides these, it may also be helpful to employ the services of a social worker,

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a voice teacher, and an otolaryngologist. Such an ideal clinical group is available at very few institutions.

Causes of Reading Disability

It is estimated conservatively that about 15 per cent of the school population of this country has some degree of difficulty in reading. Some estimates go as high as 40 per cent. There is a considerable variation, depending upon the standard of the school and the opportunity of the home. Difficulty in reading is the result of the dysfunction of the various factors that are concerned in learning. The components of the problem are so diverse that any remedial program must be based on a thorough investigation of each individual reading failure. Theoretically, an attempt at diagnosis or prognosis should not be made until *all* the facts disclosed by the individual investigation have been correlated and analyzed. However, when this is not practical, it is helpful to make a *tentative* diagnosis and modify it as new insights are gained by further tests.

Some of the many factors which influence reading and upon which learning to read depends are: The general intelligence of the individual, motivation, linguistic aptitude, vision, hearing, general health, and emotional stability. These fundamental characteristics affect one's ability to learn to read at every stage from early childhood to adult life. It is understandable that any serious deficiencies or retardation in any one of these components may interfere with one's progress in reading and may limit the degree of attainment in reading ability. Naturally, one of inferior intelligence who also suffers poor vision or hearing may be more handicapped in learning to read well than one afflicted by one anomaly only.

Ocular Factors

Reading is a very complex skill, and confining the ensuing remarks to visual factors does not imply that the others are of lesser importance. It is important, in fact, that eye specialists bear in mind that the other factors may be, and frequently are, most significant. But by reviewing briefly the more salient ocular anomalies which are to be considered, and indicating thereby the limitations of ocular therapy, it is possible to show how the eye specialist may refer cases of reading disability to the proper specialist in other fields.

Refractive Errors

Clear vision is a prerequisite to efficient reading. Errors of refraction or errors in the proper focus of the eyes are the most common anomalies suspected. There is no difficulty in detecting large degrees of farsightedness, nearsightedness, or astigmatism. In fact, the parents and teachers are able to recognize gross defects in visual acuity. It is the small degrees of visual deficiencies for which young people are able to compensate which escape detection. While it is true that small errors of refraction do not constitute a handicap to some, nevertheless, there is sufficient evidence that *correction* of small refractive errors in some reading difficulty cases provides the encouragement for increased concentration on learning to read. This does not mean that the neuromuscular effort necessary to compensate for small refractive errors is of itself the cause of

poor reading. But it seems that in one with little skill, interest, and motivation in reading, a slight neuromuscular effort results in conflicts, frustration and fatigue which make reading a discouraging task and one easily put aside with the "excuse," either consciously or unconsciously, that it is too difficult. In such cases, the correction of the slight refractive error may give renewed hope or may remove the "excuse" for not reading and often results in improved reading far beyond what is physiologically commensurate with the power of the lenses given.

Errors of Muscle Balance

Errors of muscle balance are also easily detected if they are large; but, like small errors of refraction, slight deviations of muscle balance or of binocular cooperation are difficult to measure and difficult to appraise in so far as their etiological significance in reading difficulty cases is concerned. Very often, surprising results in improved reading are reported from the correction of slight motility errors. The reason is most likely similar to that given heretofore in the correction of slight refractive errors.

The important point is that corrections for slight errors in focusing or in muscle balance should not be disregarded. Dr. Crisp, the well-known Denver ophthalmologist, has pointed out in a recent paper: "Although the amount of refractive error may seem to have little importance in relation to the problem, it is a mistake not to correct a refractive error which may add to the patient's difficulties." The patient should be given the benefit of the doubt that eye strain does contribute to his problem, provided it is not evident from tests by the reading specialist or psychiatrist that other factors more likely account for the poor ability in reading. This requires judgment and cooperation on the part of the eye specialist, the schoolteacher, the reading specialist, and the psychiatrist. It is usually inadequate in a case of serious reading difficulty to care for the ocular factors alone. By the time that consultation with the eye specialist is sought, the patient is already retarded in reading and should have the aid of professional guidance in proper reading habits. Therefore, it is often misleading to prescribe ocular corrections only.

Aniseikonia

Investigations conducted at the Dartmouth Eye Institute and at the Harvard Psycho-Educational Clinic have indicated that another ocular anomaly may be a factor in reading difficulties. This is the condition known as aniseikonia, an inequality in size and/or shape of the ocular images. When the image of one eye differs markedly from that of the other eye, binocular vision is impossible. Small differences in the relative size of the two ocular images, while not sufficient to disrupt binocular vision, are the more insidious since, when the differences in image size are within the tolerance of the individual's motor and sensorial visual apparatus, there is the constant attempt to maintain binocular vision. The exacting adjustments necessary for efficient vision, as in reading, result for some individuals in eye fatigue, headaches and other local symptoms. In others who do not persist in reading to the point of somatic discomfort, there is often a disinclination to continue the task because of frustration in not achieving

easily and readily the expected end of pleasant and meaningful reading.

Aniseikonia is not easily detected because it does not affect the visual acuity as do refractive errors. However, special instruments for measuring aniseikonia are available now in most large cities in this country. Even though an examination by a competent ophthalmologist or optometrist may disclose no ocular basis for reading difficulty in a given case, if the examination for aniseikonia is not included, there remains the possibility that this anomaly may be an important factor in limiting one's reading ability. Aniseikonia may be suspected especially in cases of unequal refractive errors in the two eyes. If one eye is more farsighted or more nearsighted than the other, aniseikonia may be present. In cases of unequal astigmatism, there is almost certainly aniseikonia.

Occlusion in Vision Testing

The covering (occluding) of one eye while reading may be a helpful diagnostic test not only for suspected aniseikonia but also for latent muscle imbalances. It is usually less disturbing to cover the non-dominant eye by a patch or bakelite shield. If this is done consistently for several (10 to 20) reading periods, and the patient reports and demonstrates significant improvement in reading comfort and efficiency, it may be concluded that some binocular difficulty, either aniseikonia or heterophoria, is present and is a handicap in binocular reading.

Eye Exercises

Various forms of eye exercises (orthoptics) have been advocated and employed for reading-difficulty cases. If the exercises are directed toward improving a measurable ocular deficiency they may improve the *ocular* efficiency, but it does not always follow that the improvement will result in improved reading, since the reading deficiency may not be caused by an ocular anomaly. A potential football player may be given all kinds of physical exercises but if he does not understand the fundamentals (the purpose, the various plays, signals, etc.) of the game he will be a poor player. However, a potential football player who does know the fundamentals will certainly be a better player by following prescribed physical exercises designed to correct a physical inefficiency. Likewise, if a child does not understand the fundamentals of reading, ocular exercises or glasses will not alone result in maximum efficiency in reading albeit the ocular treatment will enable him to be more ready for receiving instruction in the fundamentals of reading.

Need for Eye Treatment

The need for ocular treatment (glasses and/or orthoptics) varies greatly depending upon the ages of the patients and the school facilities available. Park has reported that orthoptic treatments were found necessary in 52 per cent of his cases, while Rychener and Robinson found orthoptics indicated in only 10 per cent of their cases. Unfortunately, the average ages of the cases studied are not mentioned in these two reports.

Dartmouth College Study

Imus and associates reported that 36 per cent of the freshman class at Dartmouth College had not received adequate ocular care. However, when these college subjects were grouped

according to diagnosis of ocular defects, there were no significant differences among them in *performance* on reading tests, eye-movement camera records, or academic points. It is interesting to note that the Dartmouth study concluded: "Ocular defects are not found more frequently among: (1) students having reading disability or (2) students making *low* academic grades than among the rest of the group." Even though 83 per cent of the students who were given ocular corrections reported that they were helped, nevertheless no significant gain in reading ability or academic achievement *within one college year* was measurable. Likewise, while the speed of reading was increased by instruction and supervised practice in reading, there were no indications of an improvement in college grades.

Motivation a Factor in Reading

These conclusions may be difficult to reconcile, but it should be pointed out that in the case of these college students it is patent that any reading difficulty present could not have been serious or else the student would not have reached college. If slow and inefficient reading is a handicap in college it need not influence one's grades if greater time and attention are spent in studying than that necessary for a good reader. A subsequent report by the Dartmouth group indicates that *motivation* was a greater factor in academic achievement than ocular defects or reading ability.

I was one of the clinical staff at Dartmouth at the time of the above study and despite the rather negative conclusions presented as a result of this study, I obtained the impression from dealing with a great number of the students that the subjective improvement in reading resulting from ocular treatment and from the remedial reading course *did* have real meaning.

One aspect which was not brought out in the published results of the Dartmouth study was that when a student was able to read and study better he used his free time to indulge in other activities not associated with academic grades. That is, if a student found he had to spend less time on his studies because of improved reading ability, he felt no compunction to use his saved time to better his grades but rather preferred to use this free time to engage in sports, reading for just the fun of it, or other extracurricular activities which had nothing to do with grades. This seems quite understandable and may well account for the lack of correlation found in the Dartmouth study between reading ability, ocular defects, and academic performance.

Studies on Grade-School Children

Studies made on grade-school children have given more definite indications that ocular defects play an important part in reading difficulties. Fendricks has reported on two groups of grade-school children equated with respect to intelligence, chronological age, amount of schooling and previously exposed to the same type of reading instruction but differing only in that one group was composed of children seriously retarded in reading and the other of normal readers. Among other facts, he found that (1) poor readers showed on the average lower visual acuity, especially in the right eye, the visual acuity being higher in the good readers; (2) lateral

eye-muscle coordination not significantly different in the two groups; (3) eye and hand dominance was negative; (4) telebinocular tests showed more astigmatism among poor readers.

Likewise, Betts and Austin, Gates, Dearborn and Anderson, Carmichael and Dearborn, Monroe, Taylor, and others have indicated that ocular defects may be a factor in poor reading ability.

With the exception of the Dartmouth study, no other investigation seems to have been so complete as to indicate the correlation between ocular defects, reading ability, and academic achievements. However, it is generally believed—in some cases merely by inference but in others by actual experience—that reading disability, especially in the grade-school child, is a serious handicap in academic performance, in the child's personality and in the child's future, so that remedial measures, whether by special instruction, physical or ocular treatment, are definitely worth while to the child and to society. Ocular training has been found to increase reading speed especially in those cases having little or no basic difficulty in the fundamentals of reading. Studies conducted at the Air University, Maxwell Field, Alabama, have indicated marked improvement in officers' reading speed by tachistoscopic training.

Those who are concerned with being of greater service to poor readers realize that there are a great number of children with problems in reading who are not receiving adequate attention. That the diagnosis and treatment of these cases are the responsibility of the eye specialist cannot be denied—not only because of the heritage handed down by Morgan, an English ophthalmologist who first described specific reading disability in 1895, and another English ophthalmologist, Hinshewood, who made in 1917 the first intensive study of this condition—but primarily because of the simple fact that patients with reading disability are constantly seeking advice and treatment from the eye specialists. This is done despite the fact that the reading problem is primarily an educational one.

Costly Apparatus Not Necessary

The eye specialist will perform his best service to his patients with reading difficulties if he will recognize them not only as an educational problem, but also as persons who have a special kind of difficulty. He should treat them for ocular difficulties which he is able to detect, and he should keep informed of new developments in his field (such as aniseikonia and tachistoscopic training); but, most of all, he should not discharge his reading-difficulty patients with the bland assurance, stated or implied, that ocular factors are the only causes of reading difficulty.

As pointed out in the recent paper by Rychener and Robinson, the eye specialist can become familiar with many simple tests and clues which will help in referring patients to the proper specialists in other fields. The above writers agree with Miles A. Tinker, University of Minnesota, that elaborate and costly apparatus is unnecessary in the diagnosis of reading disabilities and is even of questionable value in remedial-reading work. In many cases, a proper diagnosis can be made by the simple means of a careful history, bringing out the patient's aptitude in nonreading subjects, a dislike to read, difficulty in spelling, and

actual demonstration of inefficiency in easy reading material.

More complicated cases involving emotional factors, unfavorable home life, lack of motivation, will be found by a few informal interviews in which the patient is permitted to talk freely about himself, his family, friends, and his activities. Such cases as well as those indicating need of special training should be referred by the ophthalmic practitioner to the appropriate specialist.

Maladjustment Due to Reading Deficiency

The case of a young boy, aged 14, brings out clearly the need for proper guidance. This boy had not gone beyond the second grade and was now in an ungraded class taking a manual-training course. He had made very little progress in this class for three years and was judged by his parents to be stupid, stubborn, sullen, and irresponsible. He had been taken yearly to the family physician and to various eye specialists. Nothing much had been found physically wrong, but some eye exercises had been prescribed once which the boy liked but which did not seem to help his reading. A routine eye examination, including tests for aniseikonia, indicated slight defects which could be corrected with glasses. However, a simple reading test indicated that the boy could barely read second-grade material. Although he resided in a large city, and his parents seemed of normal intelligence, there had never been any consultation with a remedial reading specialist. When asked about this, the mother remarked that none of the doctors she had consulted had advised seeing a remedial-reading expert, and moreover she doubted that there was one in her city. The name and address of a remedial-reading teacher in that city were obtained and arrangements were made for an appointment for the boy. It was also brought out in the ocular history that the boy would like to be an automobile mechanic, and that he disliked the simple carpentry tasks he was supposed to do in the school in which he was enrolled. After only a few months of training in reading and the promise that he would be permitted to use power tools and work on cars, the boy improved remarkably not only in his reading but also in his personality.

Another interesting case is that of a husky lad of 16 who was referred for an aniseikonic examination. His mother described her son's case as that of "true word-blindness." He had been sent to private schools and someone had always had to read for him. It was learned that he had been happy only during the summers when he was at his grandfather's farm in Maine. In fact, the boy expressed the desire to live on the farm throughout the year. His parents were divorced, and he had always been sent away to a school which he disliked from the beginning. When asked what he would like to do most, he replied that he would like to work on a farm and have a farm of his own. The only thing that he spoke enthusiastically about was the farm, the horses, cows, the tractor, the woods, etc. When asked how he could read in order to send for seeds, follow directions, and keep records, he replied that he could read if he had to, but since he had always had someone to read for him he had resolved not to read at the school he did not like. The solution in this case, after consultation with the mother and the family physi-

cian, was to let the boy give up school and live with the grandparents on their farm, where he soon became very useful and happy. A rural schoolteacher was employed to teach the boy to read the material that he wanted to read, and in two years he was reading at the high-school level.

Conclusion

If eye specialists will view their patients as persons rather than as a pair of eyes expressed by so many diopters of farsightedness or nearsightedness, it is believed that the patient's problems, including difficulties in reading, will be resolved much more easily and readily. In the cases of reading disability it is essential that this difficulty be elicited from the patient himself and that tests be made, not only of the ocular functions but also of other factors involved in reading. The eye specialist should do as much as he can to remedy what ocular troubles he can find; but he should not consider his duty completely discharged until he has made sure that other possible causative factors have been considered and treated.

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NEW EYE HEALTH PAMPHLETS.—Among the newly released pamphlets of the National Society for the Prevention of Blindness are the following:

Publication 5.—*Sunglasses,* 6 pages, illustrated, 5 cts. Common questions about sunglasses.

Publication 6.—*Glaucoma,* 8 pages, illustrated, 5 cts. For patients who have glaucoma.

Publication 8.—*Eye Cues for Eye Health,* 8 pages, illustrated, 5 cts. Information for the public on such topics as eyeglasses, good lighting, safe play, what to do when you get something in your eye, eyestrain, eyes in midlife.

Publication 141.—*An Eye Health Program for Schools,* 8 pages, 10 cts. For teachers and educators.

Ophthalmology and Optometry in the Navy

Rear Admiral C. A. Swanson, (MC), *Surgeon General*

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Department of the Navy, Washington, D. C.

THE relationship existing between the Navy ophthalmologists and the Navy optometrists is one of teamwork, cooperation and complete understanding as to their particular fields of endeavor.

CARE and treatment of sick and injured naval personnel have been provided from the inception of the Navy. An act approved May 24, 1828, recognized the existence of a distinct Naval Medical Department. For many years before 1828, and up to the present, there is a record of care for the health of personnel in peace and in war of which the Naval Medical Department is proud, and justifiably so. No small part of this outstanding accomplishment is associated with ophthalmic care, both protective and corrective.

Prewar Needs

The ophthalmic needs of the naval personnel prior to World War II were cared for by the naval ophthalmologist and hospital corpsmen trained by the ophthalmologist. The policy of the Bureau of Medicine and Surgery during the prewar years was to follow up the general training of medical officers with training in the different specialties of medicine. In the specialty of ophthalmology, courses were offered in naval hospitals, civilian hospitals, and graduate medical schools. Qualifications in ophthalmology were followed by assignments to duty in the Naval Ophthalmological Service in the naval station dispensaries, outpatient dispensaries, and naval hospitals. Practical training and experience were thereby added to the theoretical training.

Naval Ophthalmological Service

The Bureau of Medicine and Surgery encouraged those who had qualified for assignment to the Naval Ophthalmological Service to qualify further for election to Fellowship in the American Academy of Ophthalmology and Otolaryngology by passing the examination given by the American Board of Ophthalmology which was established on May 3, 1917. This brought individual honors to the medical officer, certified the excellence of his accomplishment, and raised the standard of ophthalmology in the naval

hospitals to meet the requirements for internships and residencies as approved by the American Medical Association.

Wartime Ophthalmic Needs

With the approach of war, the volume of work and the details in the special needs for the care of diseases and injuries of the eyes could not be predetermined. The types of injury and the prevalence of diseases of the eyes would vary with (1) conditions of the eyes of the more than 3,000,000 new candidates for the naval service; (2) the geographical location of personnel; and (3) the type of warfare with its attendant pattern of injuries.

The qualified ophthalmologists of the regular naval service had been augmented by a few reserve medical officers before the beginning of the war. This group formed the skeleton for the organization of the Naval Ophthalmological Service. The rapid flow of reserve medical officers into the naval medical service at the beginning of the war brought experienced ophthalmologists from civilian medical practices. With them, the Navy gained the advantage of some of the best training in ophthalmologic practices that existed on the globe.

The new officers were integrated with the ophthalmologists of the naval medical service and were assigned in hospitals, dispensaries, naval stations, ships and field services to provide early and adequate care for the diseases and injuries of the eye.

Screening of Naval Recruits

The immediate job at the beginning of the war was the screening of the applicant for defective vision, defective color perception, and in general, to check the applicants' ocular functions. This was a tremendous job and the number of ophthalmologists on duty was not ample to perform this duty and to adequately care for the diseases and injuries to the eyes. The shortage of trained oculists led to the introduction of the optometrists to the naval service.

Optometric Services

Prior to the year 1941 optometrists were not commissioned in either the Regular Navy or the Naval Reserve. However, with the draft in effect and the increased burden of eye care on the Medical Department, it was necessary to have more persons trained in refractive and ocular problems to successfully carry on. Accordingly, a Hospital Volunteer Specialist Corps was created which provided for the commissioning of optometrists in grades commensurate with their age and years of experience. Early in 1941, the program was announced to the optometric profession and within a short time the initial allotment had been filled by interested and qualified optometrists. At the beginning of the war there were approximately ten optometrists on duty at various naval activities serving in commissioned rank.

Professional Teamwork

Shortly after the Pearl Harbor debacle and the entrance of our country into the war, an increased demand was created for eye care and screening of personnel for military service. Those optometrists who were on active duty were busy in the recruiting activities, examining naval applicants, and de-

tecting and correcting their refractive errors. By this time teams had been developed composed of the Navy ophthalmologist and the Navy optometrist. Visual problems were being handled quickly and efficiently. The optometrist officer would screen the vision, refract, and quickly separate the persons having ocular pathology and these cases were referred to the ophthalmologist or to the other medical officers who might be involved in the treatment of the ocular deficiencies. With the step-up in activities of the war, it was necessary to increase both the ophthalmological and optometric officer personnel. Due to shortage of medical and optometric officer personnel, it was necessary at times to have an ophthalmologist at one activity and an optometrist at another, so that independent service was established, with the liaison between the ophthalmologist and optometrist always in existence in relation to ocular diseases and injuries.

Optical Dispensing Units

Late in 1942 the need for optical dispensing units was recognized and a Hospital Volunteer Specialist, Optometry Officer, was ordered to the U. S. Naval Medical Supply Depot, Brooklyn, New York, for the purpose of studying and establishing possible ways and means of supplying glasses to naval and marine personnel in the forward areas. Early in 1943 there were at least twenty units operating in the forward areas, each manned by an optometry officer and optometrically trained optical personnel. It was possible, in many instances, not only to fabricate a pair of glasses, but also to perform on-the-spot refractions.

Postwar Situation

By the close of the war, there were one hundred and twenty-four optometrists commissioned as reserve officers in the Hospital Specialist Corps, the "Volunteer" having been eliminated from the title.

The services rendered by the optometry officer during the war in forming a team with the naval ophthalmologist, and also in successfully accepting individual responsibility in matters related to his professional training, demonstrated the need for men of this profession in the Regular Navy as well as the Naval Reserve. Accordingly, when a law was requested by the Surgeon General of the Navy to create a corps containing officers with the training allied to medicine, an optometry section was included.

In August, 1947, the Medical Service Corps was created by an act of Congress and signed into law by the President of the United States. This law provides for the commissioning of optometrists in the Medical Service Corps of the Regular Navy and of the Naval Reserve.

Ophthalmologic-Optometric Eye Protective Program

There is a definite need for the professional ophthalmologic - optometric relationship in the Naval Medical Department. At some major hospitals with busy out-patient departments and large dispensaries, in various schools, and in certain technical and administrative fields the services of both with modern scientific and professional training can be utilized to real advantage. The additional services of the optometrist are especially valuable in perpetuating the Navy's eye protective-eye corrective program at instal-

lations where it has already been established, and in establishing it at those installations where it has not yet been fully developed. This program has effected such a marked saving in eyesight, man-hours, and dollars, that its universal adoption in all Navy industrial plants should be assured. In this mission the services of the naval optometrist as well as the naval ophthalmologist are essential. The changing order of modern medical practice and research places new demands on the Navy Medical Department. Full medical care must embrace, to an ever-increasing degree, the contributions of all the professional services which support and supplement medicine.

The relationship existing between the Navy ophthalmologist and the Navy optometrist is one of teamwork, cooperation, and complete understanding as to their particular fields of endeavor.

The Navy is proud of this eye team as it provides, throughout the Navy and Marine Corps, reliable ophthalmic services of a high order, in parallel with the high standards of Navy medicine.

HONOR CONFERRED ON LESLIE DANA.—The National Society for the Prevention of Blindness has presented a special medal and a certificate for an honorary lifetime membership to Mr. Leslie Dana of St. Louis, Missouri, for his long and devoted service to the cause of sight conservation. For 25 years, Mr. Dana has maintained a special endowment fund, from the income of which were defrayed the expenses of a gold medal for distinguished service in prevention of blindness. Twenty-five leaders in this field have thus far been honored by Mr. Dana's annual award and, in being honored, have honored him. The National Society has long recognized Mr. Dana's invaluable contribution and was proud to be able to give some tangible evidence of this recognition in presenting the award to him. The presentation ceremony took place at Mr. Dana's home, the medal and membership certificate being presented by Rev. Alphonse Schwitalla, S.J., dean emeritus of St. Louis University School of Medicine, who is a member of the Board of Directors of the National Society.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

Safety Eye Wear: Good Practice and Malpractice*

The Joint Committee† is receiving increasing evidence that substandard safety eye wear is being used in numerous plants throughout the country. This fact has been brought to the attention of the Committee by its members in travel and visits to many plants, in conferences with various sections of the National Safety Council, and by individual safety groups in the United States.

Protective eye equipment must be standard; it must be designed to meet specific hazards; it must be made according to accepted specifications and possess a stated quality of material. Otherwise such equipment cannot and does not properly protect and serve the interest of the employee and the employer. A special and very representative group worked out minimum recommended practices as published by the National Safety Council, July, 1947.

It has been found in the main that small plants without benefit of safety personnel or professional eye consultants have too often been influenced by nonprofessional factors in choosing safety eye wear. They have not been fully aware of the importance of adhering strictly to the standards and practices formulated by experts in the field.

It is frequently difficult to get the cooperation of employees in observing the safety rules, and occasionally an employee may express a liking for a type of eye wear which is not always approved merchandise. Here the safety man, in order to protect the employee with something he *will* wear, occasionally yields. This is bad practice as it cancels out prestige of authority, general safety rules, and carries by word of mouth to other plants, producing unrest.

Unsafe protective eye equipment sometimes gets into a plant because an

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† Joint Committee on Industrial Ophthalmology of the A.A.O.O. and the A.M.A.

outside personal contact (friend or relative) may want to introduce merchandise of an inferior quality which management and/or the safety man may not even realize is inferior or how extremely detrimental such a purchase can be. Economic pressure and false economy also influence procurement of protective eye wear. Persons responsible for safety programs should not be forced by management to purchase materials solely on the basis of price, if this means obtaining substandard equipment.

The man responsible for safety in industry is the key to a successful and ethical program utilizing protective eye wear. When his responsibility for specifying safety requirements is subordinated to other factors, or he permits dilution of his responsibility for safety requirements, the basic principles for safeguarding employees are tragically jeopardized.

The Joint Committee would like to ask every professional eye man who has any relationship to industry whatsoever, to support, to urge, to police (if necessary) management's insistence on the use of *standard* quality protective eye wear, as the support so given to safety ethics and plant procedures is of tremendous value. It will help the National Safety Council, the ethical optical companies and those manufacturers of industrial safety equipment also handling standard safety eye wear to demonstrate conclusively to management and/or to their customers that quality merchandise is essential, that the profession stands behind its use, and that insistence on standards is not merely a commercial sales argument.

HEDWIG S. KUHN, M.D.
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Needless Referrals *

There are few ophthalmologists who have not been consulted by anxious parents with a child whose "vision," they have been told by the school, is defective. If their complaint is not this specific, it may be only that ". . . something is wrong with his eyes." Meanwhile, during the relating of the case history by anxious parents to the interested ophthalmologist, the child in question often stares calmly but perhaps interestedly around the office. When the child himself is asked a direct question, such as "How do your eyes bother you?" his answer will often be ". . . they don't." Somewhat nonplused by this answer, the physician nevertheless proceeds with a complete examination. At its conclusion, he will have found nothing—nothing, that is, but a perfectly normal pair of eyes in an apparently healthy child.

The manner in which the oculist chooses to tell the parents that there is nothing wrong with their child's eyes is particularly important. Consider for a moment who it was in the school that sent the note to the parents that "something is wrong" in the first place. It may have been the teacher or it may have been the school nurse, more likely the latter.

The basis for the note may have been mere observation of the child's behavior, the results of a visual acuity test, or the results of a series of more elaborate tests given on some visual screening device; more and more of the latter are appearing in use in the schools of today.

The important thing is that someone had—or thought they had—a rea-

* Reprinted with permission from the *American Journal of Ophthalmology.*

son for suspecting an ocular defect. The manner in which we tell the parents that there is in fact no defect can affect their subsequent attitude toward not only the school and the school nurse but toward ourselves as oculists.

If the information is given in an abrupt, gruff, "I'm-too-busy-to-be-bothered-with-cases-where-nothing-is-wrong" manner, the reaction of a normal parent is to accept the ophthalmologist's word and then condemn the school nurse or teacher. After a day or two, the experience will often begin to rankle in the mind of the parent and frequently there is a turning against the ophthalmologist too—partly because a fee was charged when nothing was found to be wrong. This is, of course, illogical but is, nevertheless, the way that many persons react. If, at some future date, something is actually found wrong with the child's health during a school examination, a note sent home to the parents is likely to be ignored as "another false alarm."

How much better is the entire situation if the ophthalmologist informs the parents that nothing is wrong in a manner something like this: "You are fortunate in two ways. In the first place, a careful examination has revealed that there is nothing seriously wrong with your child's eyes and that whatever it was that made the school nurse or teacher suspicious must have been temporary. In the second place, you are fortunate to have your child in a school where some attention is paid to more than mere books. The school is apparently interested enough in your child to examine him and, at the time of the examination, his eyes didn't seem to be normal. There are children who are not fortunate enough to be watched that closely in school and occasionally they may have serious visual defects which remain undetected for years. Such a situation is certainly detrimental to a child and to his school life. Even though this examination has revealed nothing wrong with your child's eyes, you can be grateful and confident that you are not the only one interested in your child. His school is interested too."

The response of the average parents to this type of reasoning is almost invariably good. They no longer will leave the office feeling that this was a needless referral. Not only do they now know what, perhaps, before they had merely taken for granted, that their child's eyes are normal but there is a feeling of confidence and pride in the school system. And this is as it should be.

Ideally, of course, every child would have an ophthalmologic examination prior to beginning school. Practically this is not possible. The next best thing is for the schools to do the best they can with the equipment they have in attempting to detect physical defects and call them to the attention of the parents. Such a program will obviously result in a certain number of needless referrals. The manner in which the ophthalmologist handles the needless referral can make a big difference in the relationships between family and school. It is something worth thinking about.

RICHARD G. SCOBEE, M.D.
St. Louis, Missouri

Summaries of Glaucoma Prize Essays

Following are summaries prepared by the winners of the international prize of $1,000 for research in glau-

coma, bestowed by the International Association for the Prevention of Blindness to Drs. L. and R. Weekers, Liège, Belgium; and to Dr. Jean-Gallois, Paris, France.

Simple, Noninflammatory Glaucoma
(Belgian Essay)

The Report is divided into six parts.

Visual Functions in Noninflammatory Glaucoma.—The research work includes especially peripheral measurements, campimetric and scotometric measurements, measurements by means of the critical frequency of fusion and measurements of the adaptation to darkness. These researches have for the main object the early diagnosis of the affection.

Incomplete Glaucoma.—Three cardinal symptoms characterize the glaucoma: intraocular hypertension, perimetric (peripheral) deficiency and papillary excavation. Incomplete glaucomas are characterized by the absence of one or even two of the cardinal symptoms. One of the characteristic forms of incomplete glaucomas is the glaucoma without intraocular hypertension, the study of which presents a considerable pathogenic interest.

Pathogenic Interpretation Test.—The research work described in the first two chapters shows that the different symptoms of glaucoma are not the result of intraocular hypertension. The existence of important peripheral deficiency and a deep papillary excavation in the absence of complete irregularity of the ophthalmotonus is a proof of it. The authors are seeking the pathogeny of cardinal signs of the simple chronic glaucoma. The analysis of the peripheral deficiencies at the beginning of the affection, the recording of the angioscotomas lead them to conclude that the visual deficiencies are due to some circulatory alteration of the retina and the retinal nervous lesions which are a consequence of it. The papillary excavation could result from vascular lesions on a level with the optic nerve head. Intraocular hypertension results from a vascular alteration at the level of the venous emunctory of the anterior uvea.

Rational Basis of Surgical Therapy.—The authors criticize the theory of fistulization. They are studying more particularly the mode of action of iridencleisis and the nonperforating retrociliary diathermy. In the iridencleisis, the scar is filterable only in a small minority of cases; however, ocular tension is normal in almost all the cases. The authors suggest the hypothesis of neurovascular reflex modifications, starting at the level of the operation scar the result of which would finally be a modification of the conditions of the aqueous humor.

As regards nonperforating retrociliary diathermy, the hypothesis of a filtration or of a fistulization may be excluded at once. The tensional effects of retrociliary diathermy result essentially from neurovascular alterations and modifications of the conditions of the aqueous humor which are the consequence of it. It is very likely a slowing down of the current through the decrease of biological activities at the place of formation of the aqueous humor.

Iridencleisis.—The authors describe the technique which has been used since 1932 at the Clinic of Ophthalmology of Liège. This technique includes the following phases: (1) dissection of a large piece of tissue implicating the entire thickness of the conjunctival tissue; (2) "ab external"

limbic scleral incision with the knife of von Graefe; (3) the enclaving of the iris, in the majority of cases, occurs spontaneously—therefore it is not necessary to introduce an instrument inside the eye; (4) radial tear of the iris; and (5) conjunctival suture.

The tension results of the intervention are very satisfactory. Tension becomes normal in 96 per cent of the cases of chronic glaucoma without miotic. These results are final and remain identical several years after the intervention. The intervention exposes the patient less to cataract than Elliot's trepanation. It is endured in a satisfactory manner even when the campimetric deficiencies are very far advanced.

Nonperforating Retrociliary Diathermy.—The authors have been using it since 1942. They describe their present technique: 20 to 24 applications of a thermometric electrode 0.75 mm. in diameter at 7 mm. from the limbus; duration of each application: 15 seconds; maximum temperature: 90° to 95° C.

With proper dosage, the operation entails no serious complication, but there occurs often a corneal hypoesthesia of the transitional disturbances of the pupillary reflexes and a temporary myopia which are without consequences.

Nonperforating retrociliary diathermy is indicated in simple chronic glaucoma: (1) when the tension before the operation without miotic is below 40 mm. Hg.; (2) as a supplementary operation after failure of bloody operation; (3) where there is a cause of infection which cannot be eliminated; (4) when the bloody surgical treatment is refused by the patient; (5) when the peripheral deficiencies are threatening immediately the central visual functions; (6) in painful absolute glaucoma.

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Simple, Noninflammatory Glaucoma
(French Essay)

Chronic glaucoma is a sly disease which preferably attacks middle-aged persons. If it is not treated, its evolution is fatal; it is responsible for 15 to 20 per cent of cases of blindness. It is characterized by a disturbance of the eye circulation. One of the symptoms is an increase of the pressure of the intraocular liquids which progressively crushes the visual cells and fibers and the vessels of the retina.

Decompressive operations usually improve the ocular tension, but do not always prevent, even with a normal tension, the visual field from shrinking and the visual acuity from decreasing; the idea occurred little by little that many unsuccessful operations, seemingly perfect, could be explained by medical reasons: Dr. Bailliart, by establishing that the absolute index of ocular tension was less important than its divergence with the arterial tension in the retina, helped us to understand that the examination of the eyes of a glaucoma patient should be accompanied by a complete general examination. I have followed such basic ideas and for the past 21 years I have collected facts personally observed in order to try to confirm them.

Predisposition and Early Symptoms.—Work consisted of study on the normal and pathological pigment of the iris and of the choroid; on the condition of the vitreous body; on the "cholinesterasis" of the serum; on the

possibility of discovering, by means of a personal technique in the total visual field, a beginning of the shrinking process not yet evident in the classical relative visual field.

Special Clinical Forms.—Of special seriousness are: (1) cases of the ocular hypertension in young subjects and sometimes very young ones in whom it manifests itself only by headaches of seemingly no importance; (2) cases of ocular hypertension, even a moderate one, in persons with low blood pressure; (3) cases of ocular hypertension of the "relentless" type that my "vasodilator noxiousness test" permits discovery of early.

Vascular Problem (Clinical and Therapeutic Facts).—I have ascertained that the general treatment by means of vasodilator drugs is possible, but only if the eye has been stricken rather recently with glaucoma, and moderately, and if the therapeutic action is as cautious as possible ("minimum selective vasodilatation"). Treatment is individualized for each patient. It is associated preferably with the pilocarpine eyewash and with supplementary treatment according to sex, age, and personal behavior. Treatment may postpone for a long time, and sometimes even avoid, the operation.

This treatment is not to be recommended in old cases or cases which are too pronounced, in complicated cases (hemorrhagic, secondary) or when the "vasodilator noxiousness test" is positive.

Treatment with Vitamin P.—This treatment, on the other hand, seems to be always active and never dangerous; I have shown that its effect on capillary permeability permits us to obtain success in forms where the vasodilatation treatment is contraindicated.

Early Treatment Prevents Blindness.—Chronic glaucoma remains a serious disease because it develops for a long time before vision is affected. The only chance to postpone and avoid operation is therefore to make an early diagnosis. It is one of those ocular diseases that only the ophthalmologist can discover, and is discovered by other than ordinary examination for refractive errors. If discovered early, glaucoma can receive early treatment, which should be local and general. Even when an operation is necessary treatment is still an essential supplement.

DR. JEAN-GALLOIS
Paris, France

Around the World

World Health Organization

From the pamphlet, *Facts and Figures about the United Nations*, we learn that the governments of 74 countries have joined the United Nations World Health Organization (WHO), although the Soviet satellites have announced their withdrawal.

WHO maintains an epidemic-alerting service through the use of worldwide broadcasting facilities. Eight powerful transmitters near Geneva, Switzerland, beam twice daily to every continent the latest official information on epidemic diseases and quarantine measures. A WHO intelligence post at Singapore provides special service for the Pacific and Indian Ocean areas.

Despite the scope of WHO, it had a budget of approximately $7,000,000 for the calendar year 1950—an amount considerably less than half the annual budget of the Department of Health of the City of New York.

Bulgaria

Causes of Blindness

In a 1949 report of the *Comtes Rendus Academie Bulgar Science* is a discussion of causes of blindness among 1,211 blind over 18 years of age, of whom 758 were men and 453 women. Of this group, 53 per cent lost their sight before the age of 20, and 32 per cent between the ages of 21 and 50. In order of frequency, blindness was caused by infections and social disease, injury, glaucoma, trachoma, diverse infections, and heredity.

India

Mobile Eye Unit

The province of Utter Pradesh, India, acquired its first mobile eye unit in 1947, under the direction of the Gandhi Eye Hospital. Such units are expected to take the place of the mass operative "camps" which have hitherto been used to check eye diseases and consequent blindness in the rural areas. Volume 1, No. 1, of the Clinical Journal of the Gandhi Eye Hospital describes the work of this unit for the years 1948, 1949 and 1950, covering 18 centers and districts.

Poland

In the third 1950 issue of the *International Review of Trachoma*, L. Rostkowski and J. Szmyt reported that until a more concentrated attack on trachoma was made in Poland, cases seemed to increase constantly.

In the new mode of attack, all efforts are concentrated in a single district for two years. In such an area, no patient lives more than two miles from a dispensary attended by a physician two or three times a week. In the begin-

ning an oculist examines every patient and outlines the course of treatment. The general medical practitioners later direct the treatment. The only medication used is 10 per cent sulfonamide ointment applied twice a week. Most of the infected are children and most of these heal in 6 to 8 months.

In the Wieluj district near Lodz the authors reported an initial incidence of 5 per cent of trachoma among 26,000 school children. The average incidence in Poland, however, is 0.5 to 0.7 per cent.

Serbia

L. Mandic and I. Stankovic in the third 1950 issue of the *International Review of Trachoma* reported an inquiry made in 1948 to discover the incidence of trachoma in northern Serbia. The general prevalence of trachoma in the area studied was between 6 and 10 per cent, but in some localities it was as high as 33 per cent. Two clinically and therapeutically different forms of trachoma were reported, but no differentiation is made.

Union of South Africa

Discussing the incidence of blindness in the Union of South Africa, S. K. Wentworth, M.D., and K. Cunningham, M.D., of Capetown, indicate that among the European South Africans the rate of blindness is 97 per 100,000 as contrasted with 230 per 100,000 among the colored population and 367 per 100,000 among the Bantu population.

Regarding the causes of blindness among the South African Bantus, in eleven surveys conducted during the years 1948 and 1949, almost 15,000 cases were examined and more than 8,000 of these cases were found to be suffering from eye diseases. Trachoma and conjunctivitis were responsible for more than 58 per cent of these eye diseases. Doctors S. K. Wentworth and K. Cunningham, who discussed these problems before the International Association for the Prevention of Blindness meeting last summer, indicated that these diseases were encountered most frequently where personal hygiene, sanitation and malnutrition were at their worst.

Note and Comment

Midcentury White House Conference on Children and Youth

The White House Conference held in Washington, December 3 to 7, 1950, had as its central concern how to provide each child a fair chance to achieve a healthy personality. The National Committee stated, "The purpose of the Conference shall be to consider how we can develop in children the mental, emotional, and spiritual qualities essential to individual happiness and to responsible citizenship, and what physical, economic, and social conditions are deemed necessary to this development."

Prior to the Conference, committees in every state and territory put 100,000 citizens to work. Each state or territorial committee prepared an extensive report on findings and recommendations. In these state reports there naturally was much emphasis on unsolved problems and unmet needs. Health needs were referred to in every report. Mention was made of too infrequent and incomplete health examinations of children, and of inadequate arrangements for treatment. The need for special programs for children with sight defects was pointed out.

It was estimated that about 5,000 attended the Washington Conference. Not only were general sessions held at the National Guard armory, but there were 31 panels where more specific matters were covered. Each delegate was assigned to one of 35 Work Groups where the basic work of the Conference was done. Findings and recommendations of the Work Groups were summarized and finally acted upon in a plenary session on December 7.

The Work Group on Children with Severe Physical and Mental Limitations reported on the need for special coordinated services, and for research in prevention, diagnostic and treatment techniques, and re-evaluation of present practices in school placement and financing of special services.

Among the approximately 66 resolutions adopted at the plenary session, the following are of particular interest to sight conservation workers:

"That programs for children and youth with handicaps be expanded to provide for physical, mental, emotional, and occupational needs.

"That local boards of education accept full responsibility for planning and providing adequate educational programs and services, including special services, to meet the needs of children with physical and mental limitations and that State departments of education accept responsibility for leadership service in realizing this objective.

"That guidance and counseling services in schools, employment offices, and youth-servicing agencies be strengthened and extended, and that such services take into account emotional factors involved in vocational adjustment and aptitudes for specific jobs."

Present at the Conference were Mrs. Eunice W. Wilson, director of social service of the Massachusetts Eye and Ear Infirmary; Berthold A. Lowenfeld, Ph.D., director, State School for the Blind, Berkeley, California; Miss Edith M. Baker, director, medical social work unit, Division of Health Services, Children's Bureau, Federal Security Agency; Mr. Francis Andrews, superintendent, Maryland School for the Blind; Frank H. Woods, Jr., of Chicago, chairman of Governor's Committee of Illinois on the White House Conference and president of the Illinois Society for Prevention of Blindness; Miss Helen C. Demary, executive director of the District of Columbia Society for the Prevention of Blindness; and Franklin M. Foote, M.D., executive director of National Society for the Prevention of Blindness.

Interprofessional Eye Care Committee Formed

During the recent meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago, a committee was formed called the National Interprofessional Committee on Eye Care for the purpose of improving relationships between the ophthalmological, optometric and optical professions. The committee is composed of three ophthalmologists, three optometrists, three opticians, a physicist representing the Office of Naval Research and the executive director of the National Society.

Glaucoma Clinic Opened in Milwaukee

The Marquette University Medical School has announced the opening of a glaucoma clinic to help prevent blindness from glaucoma. The clinic, under the direction of Erwin E. Grossmann, M.D., clinical instructor, Marquette University, is located in the Medical School of the University. Patients suspected of having glaucoma are referred by hospitals, social agencies, physicians and optometrists, so that they can receive the necessary tests for detecting the disease, and must come only on a referral basis. The glaucoma clinic is part of the eye clinic of which F. Herbert Haessler, M.D., is director.

Popular Magazine Features Eyesight

In the January, 1951 *Today's Woman*, on the newsstands December 20, Robert Robinson discusses hearing and visual defects in children. Under the title, "Don't Let Hidden Handicaps Retard Your Child," he calls attention to early symptoms which may go unnoticed in children, but which can be observed by parents or teachers. Such early observation can result in the prevention of more serious eye complications. Moreover they can explain certain behaviors and reactions in children which may have no other explanation. Mr. Robinson includes check lists for hearing as well as for vision—the latter supplied by the National Society—which parents and teachers can use to detect unsuspected defects at an early stage. He points out that such early detection may lead not only to the discovery of eye difficulties requiring glasses, but to obtaining early diagnosis in some children of eye diseases which if neglected might even lead to blindness.

Visibility a Factor in 17,000 Deaths

Visibility is the major factor in the four types of traffic accidents which account for 17,000, or 54 per cent, of

the nation's 32,000 annual traffic deaths. According to a survey of 19 states by The National Street and Traffic Safety Lighting Bureau, these accident types are: collision of motor vehicle with pedestrian; collision of motor vehicle with railroad train; collision of motor vehicle with fixed object; and motor vehicle running off roadway. The survey shows that 4,333, or 54 per cent, of 8,005 deaths reported by the 19 states resulted from such mishaps.

Smarting Eyes Not Always Diseased

New York newspapers on October 19, 1950, reported that police and Treasury Department agents were required to investigate the complaint of children in a Brooklyn neighborhood that something in the air made their eyes smart. Police found an illegal still, capable of turning out $2,500 worth of alcohol daily, and four 3,000-gallon vats of mash ten feet high.

Public Health in Hawaii

Under the auspices of the Oahu Health Council and with the assistance of the Board of Health and other official and voluntary agencies, Ira V. Hiscock, M.P.H., Sc.D., vice-president of the National Society for the Prevention of Blindness and chairman of the Yale University School of Medicine Department of Health, made a study of the organization and administration of public health services in the Territory of Hawaii during the summer of 1950. Chairman of the Survey Advisory Committee was F. J. Pinkerton, M.D., a consultant to the National Society for the Prevention of Blindness.

Of particular interest is the fact that among 24 major proposals for long-term development are suggestions related to the conservation of vision. The report, published in the Nov.–Dec., 1950 *Hawaii Medical Journal*, states in part: "The official agency primarily responsible for work in conservation of vision and prevention of blindness is the Bureau of Sight Conservation and Work with the Blind. For the fiscal year ending June 30, 1950, expenditures for personal services amounted to $107,465; the 1951 fiscal year appropriation amounted to $129,972, including $12,435 for maintenance. Twenty-five Lions Clubs are reported to have expended $8,006 last year for Sight Conservation and Blind work and these clubs are recognized as the chief voluntary agency in this field. This important work has a direct relation on the medical side to that of the Bureau of Maternal and Child Health of the Department of Health, while it is also related actively from the educational standpoint to many activities of the Department of Public Instruction. Certain educational features relate to the services of both departments. While there were apparently good reasons in the earlier days for having a separate department to feature this important work, with offices on all islands, it would appear wise now to consider the reorganization possibilities to combine those features which are essentially in the health field with others in progress in the Maternal and Child Health Bureau, while the essential educational phases and the appropriate amount of the present budget and personnel would be allocated to the Department of Public Instruction. Such a step seems to be in line also with featuring the child and the family needs more nearly as a whole."

Industrial Health Congress

Safeguarding of the health of workers will occupy the spotlight at the eleventh annual Congress on Industrial Health to be held in the Atlanta Biltmore Hotel, Atlanta, Ga., February 26–27, 1951. The event will be sponsored by the Council on Industrial Health of the American Medical Association, Chicago; the Medical Association of Georgia, the Fulton County Medical Society of Atlanta and the DeKalb County Medical Society of Decatur, Ga. It will stress teamwork as the key to successful industrial health services. It also will bring out the interrelation of industry and agriculture. The importance of industrial health in civil defense in times of national disaster will be highlighted in panel discussions.

Laws Regulating Practice of Optometry Upheld

On October 16, 1950, the New Jersey Supreme Court held constitutional 21 of 22 amendments to the Optometry Act passed by the legislature in 1948.

The one sentence held invalid was, "Any conduct which, in the opinion of the (Optometry) Board, is of a character likely to deceive or defraud the public," in the section dealing with causes for suspension or revocation of licenses. The court believed this a delegation of power that is essentially legislative rather than administrative.

As it now stands the act declares optometry a profession, limits the number of branch offices to two, bans neon signs and regulates other types of signs, bans window display of glasses or frames, limits advertising to a professional card, declares case records of an employed optometrist to be of a confidential nature and his exclusive property, not that of his employer, and prohibits display of diplomas and licenses to the general public.

The 1948 law was attacked by Abelson's, Inc., a company operating optical departments in its chain stores. In delivering its opinion the New Jersey Supreme Court declared, "The public health is a paramount concern of government. Apart from the protection of the individual against incapacity and fraud, the correction of visual deficiencies bears a direct relation to the public safety and our general social and economic well-being."

Leslie Dana Medal Awarded

William M. Benedict, M.D., professor of ophthalmology at the Mayo Foundation Graduate School, Rochester, Minnesota, is the 1950 winner of the Leslie Dana Gold Medal, in recognition of outstanding achievement in preventing blindness. Dr. Benedict, who is a member of the National Society's Board of Directors, was selected by the St. Louis Society for the Blind, which annually awards the medal established in 1925 by Mr. Leslie Dana of St. Louis. The presentation of the medal will take place at a dinner in the Hotel Chase, St. Louis, on January 26, 1951.

Sight-Saving Class Teachers Needed

The Board of Examiners of the Board of Education of the City of New York has announced the examinations for licenses as teachers of classes for physically handicapped children. In this classification are teachers of sight conservation classes in day elementary schools. Examinations are scheduled to be officially announced in the spring of 1951.

Circulars setting forth the eligibility requirements and information regarding scope of examination, salary, etc., are obtainable from the offices of the Board of Examiners, 110 Livingston Street, Brooklyn 2, New York.

Report of American Board of Ophthalmology

Candidates for the certificate of the American Board of Ophthalmology are accepted for examination on the evidence of a written qualifying test. These tests are held annually, in January, in various parts of the United States. Applications are now being accepted for the 1952 written test. Application for the 1952 written test must be filed before July 1, 1951. To date 98 examinations have been held. Total certificates issued number 3,143; 273 applications were received during fiscal year ending April 30, 1950.

The officers for 1951 are: John H. Dunnington, M.D., New York City, chairman; Derrick Vail, M.D., Chicago, vice-chairman; Edwin B. Dunphy, M.D., Boston, secretary-treasurer.

New Edition of Directory Published

The American Foundation for the Blind announces the publication of the eighth edition of the *Directory of Activities for the Blind in the United States and Canada*, compiled by Helga Lende, the Foundation's librarian. The Directory, which first appeared in 1932 and is published biennially, includes organizations for the prevention of blindness and sight-saving classes. National agencies, public and private, are listed first, followed by state and local agencies, listed by states. The Directory is a reference book for workers in many branches of public welfare, including sight restoration.

National Health Council Names Associate Director

The appointment of Philip E. Nelbach of New Haven, Connecticut, as associate director of the National Health Council was recently announced. The Council, of which the National Society is a member, is concerned with the improvement of public health throughout the country, and with the coordination of the programs of its member agencies.

Sight-Saving Class Children Take Pledge

The Sight-Saving Council in the Cleveland public school sight-saving classes has adopted a pledge which might very well have universal application. The pledge is as follows:

"I will try to be more careful of my eyes all the time, everywhere. I will not take unnecessary chances of straining my eyes, and will warn others against doing so. I will do *my part* to reduce the number of bent and broken glasses this year. All this I will do for the sake of humanity and the honor of my school."

National Society Makes Further Research Grants

In keeping with the policy of the National Society for the Prevention of Blindness of promoting research in the blinding eye diseases, a grant of $3,500 was made to Stanford University School of Medicine for carrying on two research projects: one on amblyopia ex anopsia and the other on congenital cataracts. The studies, which will be carried on with children, are to be made by A. E. Maumenee,

M.D., and Arthur Jampolsky, M.D., of the Stanford University Hospitals, San Francisco.

Radio Chairman Named

Jack Berch, N.B.C. singing star, has been appointed chairman of the National Society's Radio Education Committee. The appointment was made formally on Thursday, November 9, when Mason H. Bigelow, president of the Society, appeared on the Jack Berch radio show, heard from 11:30 to 11:45 A.M. (E.S.T.) Monday through Friday. The program is sponsored by the Prudential Insurance Company of America.

Leslie Dana Receives Award

In recognition of his contribution in awakening interest in eye research and in the prevention of blindness, Mr. Leslie Dana of St. Louis was inducted as an honorary member of the National Society for the Prevention of Blindness, and received a special medal voted him by the Society's Executive Committee. Father Alphonse Schwitalla, a member of the Society's Board of Directors, made the presentation in December, 1950.

Eye Institute

The National Society held a two-week institute for professional workers interested in eye health and welfare. There were 38 registrants from the District of Columbia, Florida, Pennsylvania, Maryland, Illinois, Michigan, North Carolina, Ohio, New Hampshire, Oregon, Washington, and Canada. Lectures, demonstrations and group discussions were conducted by members of the Society's staff, local ophthalmologists, and the staffs of other national societies and local agencies.

Exhibit Gets Merit Award

The National Society's exhibit on vision testing, shown during the meeting of the American Public Health Association, October 30 to November 3, received an award of merit. This is the second year in succession that the Society's exhibits have won special commendation by the A.P.H.A.'s Committee on Scientific Exhibits.

National Society Committee Meetings

Among various committee activities during the past few months, the National Society's Committee on Glaucoma, under the chairmanship of Willis S. Knighton, M.D., on October 7 held an all-day symposium at the Illinois Eye and Ear Infirmary, preceding the meeting of the American Academy of Ophthalmology and Otolaryngology. Thirty-five ophthalmologists attended.

On October 9, during the Academy meeting, the National Society conducted a meeting with ophthalmological consultants of schools and institutions for the blind. Problems discussed included how to secure recommended eye care for children in schools for the blind, and how to arrange for children with better than 20/200 vision to be educated in their own communities.

The National Society's Industrial Advisory Committee, under the chairmanship of Leonard Greenburg, M.D., met in New York on November 29. The Society's entire industrial program was reviewed and plans were laid for activities for next year.

Medical Science Wins

The November 7 election clearly showed the public recognition of the need for the use of animals in medical research. In Baltimore and Los Angeles, the antivivisectionists were unmistakably beaten in their proposed charter

amendment prohibiting experimental use of dogs from the city pound. Medical science won by a score of 160,000 to 38,000 in Baltimore, and by a score of 357,393 to 261,699 in Los Angeles.

Especially active in Baltimore's fight for medical science was Mr. John W. Avirett 2nd, vice-president of the Maryland Society for the Prevention of Blindness and a member of the National Society's Board of Directors. In contributing his efforts to the cause of medical science, Mr. Avirett has furthered incalculably the program for prevention of blindness, in which research is an important factor.

State Prevention of Blindness Developments

The National Society has found an increasing interest on the part of states in forming committees or chapters for the prevention of blindness, especially in California, Colorado, Georgia, Indiana, Michigan, Missouri, Ohio, Texas and Wisconsin.

In Indiana a state committee has already been formed with Governor Henry F. Schricker as honorary chairman, and an executive committee has been organized with Mrs. Guy Morrison as acting chairman.

In Missouri and Texas sponsoring committees are in process of being formed. In Wisconsin the Section on Eye, Ear, Nose and Throat of the State Medical Society has appointed a committee under the chairmanship of Edward J. Zeiss, M.D., of Appleton, to consider a state-wide prevention of blindness program.

Current Articles of Interest

What About Blindness in Our State? *New York State Journal of Medicine*, Part I, September 1, 1950, Vol. 50, No. 17, pp. 2075–2077.

The Commission for the Blind of the State Department of Social Welfare in New York presents an analysis of 5,051 cases for which adequate eye reports were obtained in the years 1946, 1947 and 1948. Among the topics discussed are age groups of the blind; sex incidence; diagnosis and causes of blindness; marital status; employment among the blind; and blindness in old age. Cataract ranked highest among the causes of blindness; diseases of the choroid and retina came next, followed closely by glaucoma. It was found that 36 per cent of the blind had other handicaps besides blindness: 499 were in mental institutions, 135 had hearing defects, and 1,217 were known to have physical disorders.

The Eye and the Aged, L. L. Mayer, *Geriatrics*, March–April, 1950, Vol. 5, No. 2, pp. 82–84.

Proceeding from the outer to the inner tissues of the aging eye, one notices that the skin of the lids loses elasticity, crow's-feet appear, looseness of upper and lower lids occurs, lashes lose length and abundance, and the conjunctiva becomes streaked with red lines and is dull and yellowish. Corneal changes are similar to those in the conjunctiva. Fatty infiltration and calcium deposits appear in the sclera. The uveal layer, retinal layer, optic disk and lacrimal apparatus also show many changes in the aged. The author points out that certain anomalies of the eye may be present at birth but recognized only in the adult aging eye. One of these is congenital cataract which may not affect vision throughout the individual's life. However, when lens metabolism is poor in the adult, as in diabetes or marked arteriosclerosis, mature cataracts may then result. Senescent changes, according to this author, do not occur only in the aged but form a continuous process starting in the cradle, and are largely determined by heredity and embryologic development.

We Study Testing of Children's Eyesight, M. M. Crane, *The Child*, August–September, 1950, Vol. 15, No. 1, pp. 14–17.

What are the best methods for testing elementary-school children's sight? Who should do the testing? Are the tests reliable for younger children? These questions formed the basis of the study set up in the St. Louis public schools, sponsored by the National Society for the Prevention of Blindness, the Missouri Division of Health and the Children's Bureau. Begun in February, 1948 and completed in May, 1949, the study covered first- and sixth-grade pupils in 14 schools, or about 600 children in each age group. Data are now being analyzed and conclusions are expected late in 1950. The major purpose of the study is to evalu-

ate the different testing procedures in terms of their usefulness in health programs for school children. It is believed that the study will show which procedures select the largest proportion of children needing referral for eye care and the smallest proportion of those who do not; who can do the testing successfully; and additional information about children's eyes and vision-testing techniques.

Crossed Eyes in Children, W. B. Lancaster, *The American Journal of Nursing*, September, 1950, Vol. 50, No. 9, pp. 535–537.

Pointing out that treatment of crossed eyes should be started before the child has lost the potentialities for normal binocular vision, Dr. Lancaster describes the development of vision, the important reflexes, obstacles to vision, estimating the deficiencies in the neuromuscular mechanism, and treatment. He indicates that treatment should include the following:

"1. Occlusion to prevent loss of vision by suppression.

"2. Early operation to place the eyes in such a static position that the reflexes are able to control the ocular movements. Thus operation makes it possible for the patient to learn to use his eyes together in a normal way.

"3. Orthoptics to teach the patient how to use the eyes normally and to make the best possible use of the vision he has."

A Physiological Study of Refractive Errors, J. I. Pascal, *The Eye, Ear, Nose & Throat Monthly*, October, 1950, Vol. XXXIX, No. 10, pp. 550–556.

"When I say a 'physiological' study of refractive errors I mean to stress the mode of activity, the functioning of a living, dynamic organ set in a living, dynamic organism. For it is the organism as a whole which has to cope with the distress caused by refractive errors." With these comments, Dr. Pascal introduces his discussion of some general principles and some unfamiliar points of view. He analyzes such concepts as emmetropia and visual acuity, using the approach that *what* and *how* one sees depends very much on the general physical and mental condition of the individual. In conclusion, he says, "Let us . . . remember that there is an eye behind the eye. The eye of an idiot may be in itself a perfectly functioning organ . . . yet because of the ill-developed brain behind it, the degree of vision obtained, vision in the full sense of the term will be very poor. All the magnificence of form and color, all the beauty of nature and art which thrills and enriches the mind of the normal individual will be lost on the mind of the idiot—the psychic eye is not functioning."

The Surgery of the Inferior Oblique Muscle, Part I, Clinical Physiology and Operative Indications, M. Loutfallah, *The Eye, Ear, Nose & Throat Monthly*, October, 1950, Vol. XXXIX, No. 10, pp. 543–550.

Until recently, according to the author, operations on an oblique muscle of the eye were rare. He indicates that with a better understanding of the underlying factors in strabismus, surgery involving oblique muscles often becomes a necessity, making a knowledge of the normal and pathological anatomy of these muscles essential. His study is concerned with the rôle of the inferior oblique in comitant and paretic heterotropias (strabismus), and consideration of methods of correcting

the vertical component produced by direct or reflex dysfunction of the muscle. Interpretation of verticle deviations, he explains, is far more difficult than mere recognition of them. He presents the elements upon which these deviations depend, discussing clinical physiology of, and indications and contraindications for operations on, the inferior oblique muscle.

Diagnosis of Multiple Ocular Muscle Paralyses, W. E. Krewson 3d, *The Journal of the American Medical Association*, October 14, 1950, Vol. 144, No. 7, pp. 534–537.

In this article the usual diagnostic methods are reviewed with relation to multiple ocular muscle paralyses; some difficulties and confusing factors found in the presence of multiple paralyses are discussed briefly; and the more commonly encountered multiple ocular paralyses are listed.

Strabismus, H. M. Burian, *Archives of Ophthalmology*, July, 1950, Vol. 44, No. 1, pp. 146–154.

A review of the literature on concomitant strabismus, the type of squint in which the squinting eye has full range of movement, is provided and the following aspects are considered: etiology (classification); diagnosis and symptomatology; nonsurgical treatment (orthoptics); and surgical treatment. Regarding orthoptics, the point is made that it is concerned with the acquired binocular skills, and can only assist the patient in developing the best binocular skills of which his eyes are capable. Orthoptics is, therefore, a teaching process, involving the five steps of learning—attention, awareness, response, satisfaction and repetition. As such, it is an opportunity offered the patient rather than a treatment.

Trifocals, E. Bedell, *Today's Health*, November, 1950, Vol. 28, No. 11, p.18.

Three-way lenses—trifocals—often solve the problems of vision that occur naturally as an individual and his eyes advance beyond the age of 40, according to this author. Presbyopia occurs when the muscles and ligaments of the lens and the lens itself begin to lose their elasticity, bringing about a normal decrease in the ability of the eye to change focus. Three-way lenses make it possible for persons with this eye condition to see in all three ranges of vision: reading, distance and arm's length. These lenses are often a big factor in prolonging the number of years people can work at top efficiency, since they accommodate the eyes to the working range of vision—18 to 50 inches from the eyes. It is estimated that about 500,000 people in the United States wear these three-way lenses. A survey conducted by a leading lens company showed that 60 per cent of the people for whom trifocals had been prescribed found them easier to adjust to than bifocals, the remaining 40 per cent finding them as difficult to adjust to as bifocals. The author concludes with a quote from a leading ophthalmologist: "The 45,000,000 Americans over 40 who wear glasses should discuss three-way lenses with their eye doctors, since most are potential users."

Ophthalmia Neonatorum, W. L. Benedict, *The Journal of the Michigan State Medical Society*, May, 1950, Vol. 49, No. 5, pp. 560–565.

Striking results in the treatment of ophthalmia neonatorum with sulfonamides has led to their use as a prophylaxis as well. Since the introduction of the sulfonamides, the long-

established Credé silver nitrate method of prophylaxis has been open to criticism. The author discusses the pros and cons of silver nitrate and the sulfonamides from the standpoint of prophylaxis and treatment of ophthalmia neonatorum. He makes the point that any hazards connected with the use of silver nitrate are not inherent in the drug but in the frailties of those using it. In conclusion, he says, "A study of the reports . . . impresses one with the efficiency of the Credé method of prophylaxis, its simplicity and the universality of its application. . . . However, in the treatment of ophthalmia neonatorum . . . silver nitrate is not the drug of choice. In such cases, there is no doubt of the efficacy of sulfa compounds and of penicillin. . . . No suitable substitute for silver nitrate 1 per cent solution as a prophylactic agent has been found in the long list of new bacteriostatic drugs. It is not now conceivable that established health measures should be abandoned until better measures have been indisputably proved. . . . Let's preserve the laws and regulations as they are."

Observations on the Prophylactic Treatment of the Newborn with Penicillin, T. Berwind, *Geburtshilfe und Frauenheilkunde*, April, 1950, Vol. 10, pp. 312–317.

About 1,090 newborn babies' eyes were treated with penicillin at the Women's Hospital in Wurtzburg. The penicillin solution was made up to contain 50 units per drop. The solution was kept in the ward at room temperature and was replaced bi-weekly. The author did not consider it necessary to refrigerate it. Each newborn received two drops in each eye immediately after birth; that is, 100 units. It was considered essential that the child be treated immediately after birth and before it has opened the eyes itself, so that no infection could enter. In his series of 1,090 cases, he reports a conjunctivitis due to irritation in 11.01 per cent of the cases, of which 9.45 per cent were very mild, 1.28 per cent were moderately severe, and 0.18 per cent were severe. Only one case of gonorrheal ophthalmia occurred (.09 per cent).

The author sums up his paper by stating:

1. Cases of prophylactic treatment of the newborn with penicillin reported numbered 1,090.

2. Penicillin seems preferable to silver nitrate as a prophylactic measure in the prevention of gonorrheal infections. Certainly it causes less irritation and less nonspecific irritation.

3. The author is considering increasing the dose of penicillin in order to have even greater protection against gonorrheal and other infections.

BERNARD KRONENBERG, M.D.

Life Situations, Emotions, and Glaucoma, H. S. Ripley and H. G. Wolff, *Psychosomatic Medicine*, July–August, 1950, Vol. XII, No. 4, pp. 215–224.

Eighteen persons with primary glaucoma were studied to determine whether a relationship between emotions and intraocular pressure could be shown. Findings demonstrated such a relationship, since all patients presented a history of difficulty in personality adjustment. As a whole they had had unsatisfactory relationships with parents, which resulted in the development of feelings of in-

security. Often the patient had been a favorite child. All had a history of anxiety, anger, or depression associated with some frustrating life situation that coincided with the onset of glaucoma. However, in no one patient was there a single emotional reaction or a special type situation associated with changes in eye symptoms. Among the characteristics of these persons were also overconscientiousness, meticulousness, fluctuations in mood, excessive body preoccupation and sexual maladjustment. Five representative case histories are included to illustrate these findings. By way of explanation the authors offer the thought that the participation of the eye in an emotional upheaval and an increase in intraocular pressure may represent an ineffectual biologic response—such response being common in the aging period when there is a decrease in the flexibility and effectiveness of psychologic and physiologic mechanisms maintaining steady states in the organism.

Nursing Care for the Glaucoma Patient, H. E. Weaver, *Nursing World*, October, 1950, Vol. CXXIV, No. 10, p. 460.

The author offers advice to nurses on the care of the glaucoma patient in the hospital, at the clinic, or in the home, and concludes:

"Nurses can make a very worthwhile contribution to the prevention of blindness program by providing an individual nursing service to those patients who suffer from glaucoma, and by encouraging medical examination and follow-up for those persons who present symptoms of glaucoma.

"In any event, it is the nurses' responsibility to be aware of their opportunities and set up specific goals in their effort to bring about a reduction in the number of glaucoma-blindness cases."

Comparative Provocative Tests in Glaucoma, W. Leydhecker, *The British Journal of Ophthalmology*, September, 1950, Vol. XXXIV, No. 9, pp. 535–544.

The purpose of this study is to compare the results of the lability test with those of its two components, the venous-congestion test and the cold-pressure test, on normal and glaucomatous eyes, under conditions corresponding as closely as possible. The reaction of the same group of glaucomatous eyes to the water-drinking test is investigated. Methods used and results obtained are discussed in detail. Numerous accompanying tables further illustrate the results obtained.

The Differential Diagnosis of Diabetic Retinopathy, G. M. Haik, L. A. Breffeilh, and M. R. Harrington, *New Orleans Medical and Surgical Journal*, October, 1950, Vol. 103, No. 4, pp. 151–155.

An unfortunate result of the increased life span has been an increasing incidence of blindness among the aged, most frequent causes of which are glaucoma, cataracts and retinopathy. Progress has been made in the treatment of retinopathies through the use of vitamin P with special reference to rutin and dicumarol. Results of treatment have been judged satisfactory, but investigators believe that the drugs are best used in prevention rather than in the therapy of these conditions. Best results have been obtained in early therapy rather

than in far-advanced cases of retinopathy. A number of studies have shown that the incidence of diabetic retinopathy as well as diabetes itself is increasing, and that the retinal complication is not related to the age at onset or the severity, but to the length of time the person has had diabetes. It is estimated that 4,125,000, or 2.9 per cent of the nation's population, will become diabetic. Retinopathy was present in 8.3 per cent of one investigator's series for 1921, in 17.7 per cent of his 1934 series, and in 30.6 per cent of his 1945 series. Differential diagnosis, according to the authors, concerns itself primarily with vascular diseases. Only if the correct diagnosis of the disease is made early can the proper therapy be started for the prevention of retinal complications.

The Ocular Manifestations of Riboflavin Deficiency, J. J. Stern, *American Journal of Ophthalmology*, July, 1950, Vol. 33, No. 7, pp. 1127–1136.

An explanation for the apparent incompatibility of findings regarding ocular manifestations of riboflavin deficiency is offered, together with a critical review of different opinions. The following points are considered in summary:

"1. Corneal vascularity is a condition in which newly formed blood vessels enter the normally avascular corneal periphery; limbic congestion and circumcorneal injection may be early stages, but they are nonspecific and not pathognomonic for ariboflavinosis.

"2. Corneal vascularity of riboflavin deficiency is of a type not observed in any other known clinical condition and is pathognomonic.

"3. Riboflavin deficiency always causes corneal vascularity—if it lasts long enough to produce a low enough riboflavin concentration in the tissues.

"4. The appearance of corneal vascularization may be precipitated by conditioning factors such as chemical or mechanical trauma to the cornea in the presence of a subliminal riboflavin deficiency."

Lipoid Metabolism of the Cornea, E. De Berardinis and M. De Vincentiis, *Rass. Ital. d'Ottal.*, May–June, 1950, Vol. XIX, Nos. 5–6, p. 164.

The article contains an extensive review of the knowledge of the biochemistry of corneal metabolism. It emphasizes that most of the preceding studies relate to the biochemistry of the sugars and amino acids. The authors feel that the study of the fatty acids is greatly important. Experimental studies were made on rats to determine the intracellular metabolic relations between stroma and epithelium and the exchange of hydrate of carbon of the corneal tissues, which, according to the Baltimore school, represents the principal source of nutrition of this structure. The results of these studies demonstrated the capacity of the cornea to break down such substrates by action of the esters.

An extensive bibliography is appended.

EUGENE M. BLAKE, M.D.

Behavior of the Crystalline Lens in Rats Subjected to a Low Protein and High Fat Diet, G. Morone, *Rass. Ital. d'Ottal.*, May–June, 1950, Vol. XIX, Nos. 5–6, p. 211.

Numerous experiments were made with various diets to determine what effect was produced in the lenses of

rats. A relatively small effect was observed in general. Among the changes were intensification of the suture lines, subcapsular spots and clouding of the nucleus. These were observed following diets low in proteins and high in lipid-forming compounds.

EUGENE M. BLAKE, M.D.

Developmental Anomalies of the Eye, W. O. Murphy, *Texas State Journal of Medicine*, September, 1950, Vol. 46, No. 9, pp. 698–702.

Dr. Murphy discusses the fields of research in embryology in which fruitful results have been attained—gross abnormalities, colobomas (any congenital, pathologic, or operative defect of the eye), iris defects and cataracts. Concerning the etiology of developmental cataract, he points out that any opacity of the lens, however large or small, is technically a cataract and that all cataracts are aberrations and never arrests in development. In general, the cause of the aberration is unknown, but toxic substances, germinal factors and disturbances of metabolism may cause cataracts.

The Early Diagnosis of Trachoma, A. Fuchs, *United States Armed Forces Medical Journal*, October, 1950, Vol. 1, No. 10, pp. 1171–1177.

In his discussion of the early diagnosis of trachoma, Dr. Fuchs draws upon his personal experiences in China with the United Nations Relief and Rehabilitation Administration and the World Health Organization in 1946 and 1947. He and 10 other trained ophthalmologists examined over 1,000 children and found that many did not show the typical findings seen in trachoma; yet many of the Chinese oculists had diagnosed them as trachoma cases. These discrepancies are due to the tendency to diagnose common chronic conjunctivitis as trachoma. In the early stages of trachoma there is often a mixed infection, which, says Dr. Fuchs, is observed especially in Egypt where so many other types of severe infectious conjunctivitis are seen. Here the trachoma virus is transmitted with the conjuctival secretion, apparently by the flies that often literally cover the eyes of children. Dr. Fuchs states that trachoma is much less severe in China than in Europe or the Near East. He believes that a therapeutic test is essential for children with nodules in a normal tarsal conjunctiva, since they might harbor inclusion bodies and so be carriers without having clinical trachoma. Although the carrier state in trachoma has not been proved, it is a possibility, since carriers of other viruses exist. He indicates that if treatment causes these follicles to disappear in from 4 to 6 weeks, true trachoma was not present.

Cataract Surgery for One-Eyed Patients, D. B. Kirby, *Transactions* American Academy of Ophthalmology and Otolaryngology, May–June, 1950, pp. 542–560.

Dr. Kirby reports 81 of his own one-eyed patients and 355 added by 20 colleagues who replied to a questionnaire. He discusses psychology of the one-eyed patient and of his surgeon, investigation of loss of the first eye, preparation for surgery, indications, timing of operation, prevention and management of complications, and procedures used in the operation. In the surgical group, uveitis, glaucoma and the escape of vitreous accounted for the highest percentage of

loss of the first eye. The author states that meticulous care in the preparation of the patient, particularly in achieving adequate anesthesia, basal sedation, basal analgesia and general akinesia, has resulted in a reduction of operative and postoperative technical causes of failure. Regarding final prognosis in one-eyed patients, he states that cases in which the second or only eye was normal when operation was performed gave a very high percentage of successful results, but that in the over-all group there are about 15 per cent in which the chance for vision is no better with the second eye than it was with the first.

Headache and Head Pain of Ocular Origin, A. D. Ruedemann, *The Journal of the American Medical Association*, October 14, 1950, Vol. 144, No. 7, pp. 517–519.

Two facts are stressed concerning headache and head pain of ocular origin: (1) One should not divorce the eye from the rest of the body, and (2) writing a prescription for glasses is not always the answer so far as relief from headaches is concerned. The eyes are a cause of headache in 25 per cent of patients and the patient's history and his manner of giving it are important for the diagnosis of his condition. The author lists the types of ocular abnormalities causing unilateral head pain and the conditions causing frontal headache. Glaucoma of any type may cause severe pain, and general disease is sometimes the cause of ocular pain.

Ophthalmic Headache, A Differential Study, F. M. Walsh, *The Journal Lancet*, July, 1950, Vol. LXX, No. 7, pp. 259–263.

According to Dr. Walsh, a time profile of the headache is of considerably more clinical importance than the location of the pain. A knowledge of time and character of onset, duration, period of greatest intensity, interval between headaches and associated disturbances can often start investigation down the right road immediately. This time profile is emphasized throughout his discussion of ambulatory headaches which are described from the standpoint of differential diagnosis. He includes localization, ocular headaches, hypertension, cervical arthritis, brain damage, headaches of functional origin, other miscellaneous headaches, and triggering mechanisms.

Nystagmus: Its Mechanism and Significance, W. F. Gorman and S. Brock, *The American Journal of the Medical Sciences*, August, 1950, Vol. 220, No. 2, pp. 225–233.

Nystagmus denotes those abnormal movements of the eyes of many different types occurring in numerous varying conditions. Since there has been no universally accepted classification, terminology or clinical interpretation, the authors here describe some forms of nystagmus commonly encountered, and discuss their mechanisms and significance. The condition consists of a rhythmic alternating tremor of the eyes, appearing in various positions of gaze, especially lateral, and showing usually a slow and a fast component—the slow motion being followed regularly and rhythmically by a fast motion in the opposite direction. Although it can occur spontaneously in normal individuals, it is more often a sign of ocular or systemic disease. The au-

thors discuss associated phenomena such as oscillopsia, the visual illusion in which stationary objects seem to move; classification and types of nystagmus; nystagmus in disease of the central nervous system as well as that without obvious disease; induced, labyrinthine and ocular nystagmus; and nystagmus due to drugs.

Evaluation of Treatment of Herpes Simplex Cornea with the Newer Antibiotics, A. E. Braley, *The Journal of the Iowa State Medical Society*, October, 1950, Vol. XL, No. 10, pp. 486–490.

Herpes simplex cornea is a common disease, constituting one of the most frequent ulcers of the cornea. The author describes four types and presents an evaluation of treatment with aureomycin. Clinical treatment included 32 cases of dendritic keratitis treated with aureomycin borate and aureomycin ointment. In 14 of these the ulcer was healed in 24 hours. Three patients with metaherpetic keratitis were treated with aureomycin ointment. Two of these have responded well, and while the third was still complaining of pain at the time of reporting, there had been no staining of the cornea since the ointment had been used. Dr. Braley indicates that when a dendritic ulcer of the cornea is seen, it is not possible to give an accurate prognosis as to the effect of aureomycin borate or aureomycin ointment on the lesion, since there are four types of patients to be treated. However, if aureomycin is used in the first type (recurrent herpes lesions) chances of success are excellent, the ulcer usually being healed within about 24 to 48 hours.

Beta Ray Uses in Ophthalmology, A. D. Ruedemann, *The Wisconsin Medical Journal*, July, 1950, Vol. 49, No. 7, pp. 581–584.

Early in his discussion Dr. Ruedemann makes the point that any type of radiation therapy is useful but destructive therapy, and that a destructive mechanism may be too great for the eye, throwing the patient into a decline which may be worse than the original disease. He summarizes the uses of radiation therapy as follows: "Heavy dense lesions of the lid are best treated by contact x-ray therapy and gamma rays. Other therapies, such as radium-D or radon, do not penetrate deeply enough and the treatment time is too great. Radon in the treatment of corneal lesions is better than radium-D because, again, a youngster cannot be held still long enough. . . . The treatment-time factor is very important in infants, and this is where radon is tremendously important. In the adult group, radium-D applicators as put out by the Canadian Radium Corporation . . . are strong enough if they are applied long enough. Again, the treatment-time factor is so great that one gets tired of holding them."

Treatment of Eye Injuries on a Plantation, H. Kushi, *Industrial Medicine and Surgery*, August, 1950, Vol. 19, No. 8, pp. 372–373.

The author discusses eye injuries resulting from foreign bodies, which occur most frequently in plantation work. He considers history of the injury; position of the patient; illumination for location and removal of foreign bodies; anesthesia; magnification of the foreign body; examination routine; removal; and immediate aftercare.

Book Reviews

THE PRACTICE OF REFRACTION. Sir W. Stewart Duke-Elder. St. Louis: C. V. Mosby Co., Fifth Edition, 1949, 309 p. inc. append.

This small volume continues to be one of the standard textbooks on refraction. It covers the practical basic points of geometric and physiological optics in a simple and understandable manner, as a prelude to the proper prescribing of lenses.

The anomolies of refraction are then discussed thoroughly, outlining etiology, pathology, symptoms and treatment, especially in relation to other physiological processes such as muscle-balance, with regard to the patient as an individual. In this latter respect the first section on eyestrain is invaluable.

This edition has been brought up to date to include the latest knowledge of refractive errors and the theories of physiological processes involved. Some points of view have been revised. Modern technics have been amplified.

Perhaps the greatest criticism of this—as well as of most texts on refraction—is the lack of a simple, step-by-step procedure for the beginner. The neophyte must review the whole subject before he is able to start the practical work, whereas if each step—cycloplegia, retinoscopy, subjective refraction—were explained more simply at first, the details and niceties of examination could be filled in later.

In the final analysis, accurate refraction requires the careful consideration of many details, and the serious refractionist will value this book for its comprehensive yet not overburdened presentation.

WILLIS S. KNIGHTON, M.D., *New York, N. Y.*

THE TRUTH ABOUT YOUR EYES. Derrick Vail, M.D. New York: Farrar, Straus & Company, 1950. 192 p.

In this clearly written book the head of the Department of Ophthalmology at Northwestern University provides the layman with an understanding of how eyes function, of eye diseases and disturbances, and of what can be done about them without unnecessarily alarming the reader. There is an excellent discussion of facts and fallacies about wearing eyeglasses, bifocals, contact lenses, tinted glasses.

The value of fusion exercises in the treatment of cross eyes and their lack of effect in changing the amount of nearsightedness are explained.

Cataracts and glaucoma are leading causes of blindness among our aging population, and it is good to find separate chapters devoted to each of these important problems. The need for thorough examination by an oculist of any person suspected of having glaucoma is stressed, together with the need for lifelong observation and treatment. In view of the conservative estimate of one case of glaucoma among each fifty persons over forty

years, this section is a "must" for those interested in adult health.

There is a relatively brief discussion of reading difficulties among school children. The chapter on hygiene of vision is sound and provocative; ten rules are given for good eye health. Rule number four, in which Dr. Vail prescribes his own secret remedy for tired eyes, can save the patent medicine addict the price of the book within a few weeks. Both the publishers and the author are to be congratulated on producing a volume of such value in interpreting this field of public health.

FRANKLIN M. FOOTE, M.D.

THE PSYCHOLOGY OF EXCEPTIONAL CHILDREN. Karl Garrison, Ph.D. New York: Ronald Press Company, revised edition, 1950, 517 p.

Chapter 14 of this recently published revised edition discusses "The Problem of Defective Vision." Unfortunately the chapter is somewhat lacking in balance and contains a number of confusing, inadequate, and inaccurate statements. It is to be regretted that in discussing "the range of light for comfortable reading" the author has not taken into consideration the recommendations made in *American Standard Practice for School Lighting* and other recent sources. Most surprising of all is the realization that, in a text on the psychology of exceptional children, there is not a single paragraph relating to problems of the partially seeing child. Those desiring accurate, up-to-date information on visual problems and on education of children with defective sight will get little constructive information from the contents of this chapter.

MARJORIE A. C. YOUNG, M.Ed., M.P.H., *New York, N. Y.*

PROCEEDINGS OF THE FIRST CLINICAL ACTH CONFERENCE. John R. Mote, M.D. Philadelphia-Toronto: The Blakiston Company, 1950, 623 p.

The 52 papers in this volume were presented at the October, 1949 conference sponsored by Armour and Company. Adrenocorticotrophic hormone, a substance produced by the pituitary gland, was used on 53 normal people and on 560 patients suffering from a wide variety of conditions. Although there is little mention of eye disease, the volume is of considerable interest because of its discussion of the general effects of ACTH and of the occasionally untoward side-effects. In general, allergic conditions and "collagen diseases" were most responsive to ACTH. In many conditions where ACTH gave quick relief of symptoms, relapses were common unless smaller doses of ACTH were continued. Mote concludes by pointing out that a tremendous amount of research will be required to understand properly the rôle of the adrenal gland in health and disease.

SOME SUGGESTIONS FOR WRITING HEALTH MATERIALS. Edgar Dale and Hilda Hager. National Tuberculosis Association, 1950, 34 p.

In the Bureau of Educational Research at Ohio State University the authors investigated the understanding of many health terms among a group of over 100 adults who had varying amounts of schooling. Certain examples are revealing of how often "popular" health leaflets miss their mark.

The words "disease," "examination," "check-up," "lens," "medical"

and "physician" were known to more than 90 per cent; "professional" and "vision" were known to 76 to 90 per cent; "consult" and "safeguards" were known to 56 to 75 per cent; "oculist" and "visual" were known to 31 to 55 per cent. The term "case-finding" was known to fewer than 30 per cent. The words "ophthalmologist," "optometrist" and "optician" were not tested.

The writers point out that, according to U. S. census figures, the average adult over 25 years of age has only slightly more than eight years of schooling. About one fourth the adults read at or below the sixth grade level, forty-five per cent at the eighth grade level or below, and only one fourth at or above the twelfth grade level. The urban Negro on the average reads at just below the seventh grade level, and the rural farm Negro on the average at the fourth grade level. If we are to have our educational leaflets understood, we must improve our understanding of the art of communication. The needs for defining as specific an audience as possible, for defining clearly our purpose, and many similar suggestions make this publication of value to all health and social workers who at any time deal with "the public" either by the written or spoken word.

THE ADJUSTMENT OF THE BLIND. Hector Chevigny and Sydell Braverman. New Haven: Yale University Press, 1950, 320 p.

Although most of this provocative book deals with the blind, the section on forecare is of particular interest to ophthalmologists and to nurses and social workers in eye clinics.

In discussing when the patient should be told the truth, that he is going blind, the authors point out that the ophthalmologist is in charge of the patient's mental and emotional state in one of the most critical periods of the patient's life. "There are few disturbances to organs which occasion more worry and anxiety than trouble with the eye, particularly if it causes pain." The authors, however, do not agree with those who would withhold the truth about a bad prognosis on the basis that "what you don't know doesn't hurt you." On the contrary, they point out that the suspense contributes to the anxiety syndrome, that what a man merely suspects is built up often in fantasy to something far more terrifying than the truth.

The book is well written and the sections, "The Meaning of Sight," and "Blindness as Cure for Neuroses," should stimulate much discussion.

Editor's Note: Our attention has been called to an inaccuracy in lines 7 through 14 of the review of *Vision: Its Development in Infant and Child*, by Gesell, Ilg and Bullis, appearing on page 200 in our Fall, 1950 issue. The reviewer was in error in implying that funds of the Department of Ophthalmology of the Yale School of Medicine were used in financing certain research described in the book. We regret not having checked the reviewer's statement. The exact wording in the preface of the book reads: ". . . at an earlier stage of our study (1942–43) we received small but significant grants from the Graduate Clinic Foundation, the Optometric Extension Program, and from the Fluid Research Fund of the School of Medicine, Yale University."

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